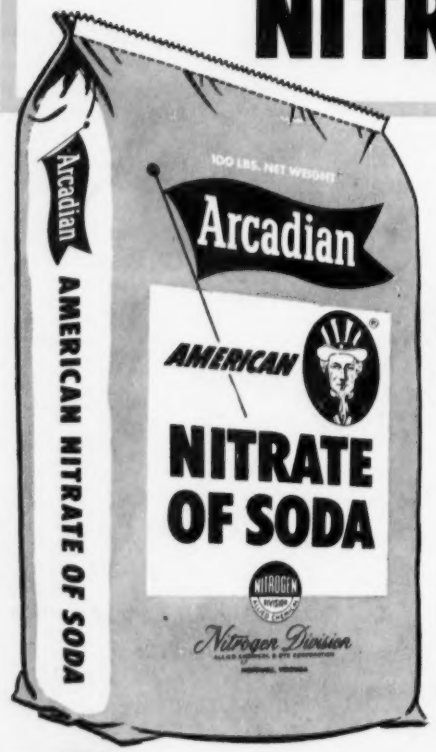
FEBRUARY, 1955

# COMMERCIAL FERTILIZER

CONSOLIDATED WITH THE FERTILIZER GREEN BOOK

and PLANT FOOD INDUSTRY


## NEW STYLE AMERICAN NITRATE OF SODA




**Best ever produced** — New-process ARCADIAN® *American* Nitrate of Soda has the improved physical condition that puts it in the top rank for ready handling and easy spreading.

**Big, triple-screened crystals** as made by ARCADIAN give your customers all the advantages of 16% quick-acting nitrate nitrogen that is free-flowing in any method of application, and that holds physical condition better in storage. Also provides the benefits of 26% sodium content.

**Check Your Stocks NOW!**

—make sure you get enough of the improved ARCADIAN *American* Nitrate of Soda, best for you because it's best for your customers. See us now.

Arcadian®

PRODUCTS FOR PROFITABLE FARMING

Nitrogen Solutions (NITRANA® and URANA®)
AMERICAN Nitrate of Soda
A-N-L® Nitrogen Fertilizer
Urea Products
Sulphate of Ammonia

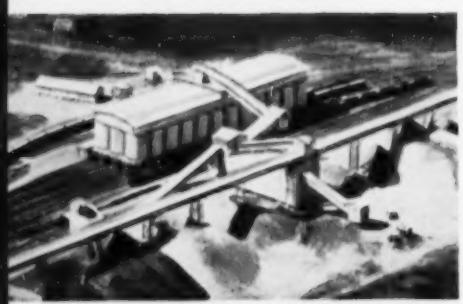
NITROGEN DIVISION ALLIED CHEMICAL

**NITROGEN DIVISION** Allied Chemical & Dye Corporation
New York 6, N. Y. • Indianapolis 20, Ind. • Hopewell, Va. • Atlanta 3, Ga. • Ironton, O.
Columbia 1, S. C. • Omaha 7, Neb. • San Francisco 3, Cal. • Los Angeles 15, Cal.

Three of the A.A.C. Co's electrically-operated draglines at work at our phosphate mines in Central Florida. Bucket capacities range from 9½ to 17 cubic yards. The 17-yard draglines with their 175-foot booms each weigh more than a million and a half pounds and can move 35,000 tons of material in 24 hours. From these rock deposits flow a continuous stream of high quality phosphate rock, assuring a dependable source of supply of AA QUALITY phosphorus products, see list below.

# AA Quality...

## for over 85 years a symbol of quality and reliability



From the air—wet rock storage and drying plant, with dry rock storage silos in background. These silos, 29 in number, have a total capacity of 40,000 tons of dried rock. Under the silos are four runways where 40 railroad cars can be loaded at a time.

### principal AA QUALITY products

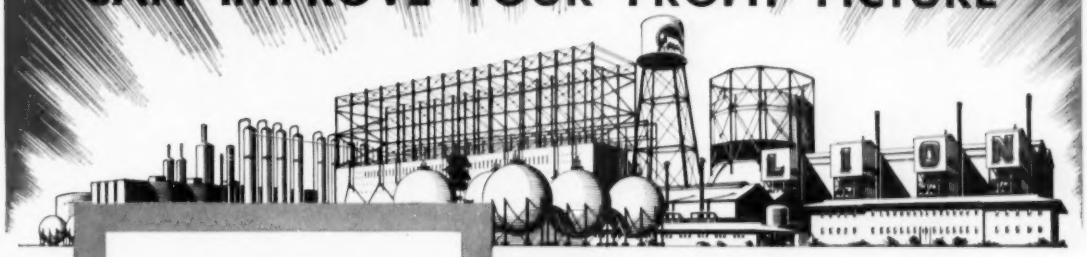
**All grades of Florida Pebble Phosphate Rock**
**AA QUALITY Ground Phosphate Rock**
**All grades of Complete Fertilizers** **Superphosphate**
**Gelatin** **Bone Products** **Salt Cake** **Ammonium Carbonate**
**Sulphuric Acid** **Fluosilicates** **Insecticides and Fungicides**
**Phosphoric Acid and Phosphates**
**Phosphorus and Compounds of Phosphorus**

**THE AMERICAN AGRICULTURAL CHEMICAL COMPANY**

GENERAL OFFICE: 50 CHURCH STREET, NEW YORK 7, N. Y.

30 FACTORIES AND SALES OFFICES, SERVING U.S., CANADA AND CUBA—ASSURE DEPENDABLE SERVICE

# Buying from A LEADER CAN IMPROVE YOUR PROFIT PICTURE




**Lion—A Leader in Petro-Chemicals— offers**

**ONE-STOP SERVICE FOR QUALITY NITROGEN FERTILIZER MATERIALS**

**Lion Anhydrous Ammonia** — For formulation. A uniformly high-quality basic product. Nitrogen content, 82.2%.

**Lion Aqua Ammonia**—For formulation or acid oxidation. Ammonia content about 30%. Other grades to suit you.

**Lion Ammonium Nitrate Fertilizer** —For formulation or direct application. Improved spherical pellets. Guaranteed 33.5% nitrogen.

**Lion Nitrogen Fertilizer Solutions** —For formulation. Three types to suit varying weather and manufacturing conditions.

**Lion Sulphate of Ammonia** — For formulation or direct application. Uniform, free-flowing crystals. Guaranteed to contain a minimum of 21% nitrogen.

**Because of Lion's leadership in nitrogen fertilizer production in the South, Lion can show you the way to MORE PROFITS.**

**When you buy your complete nitrogen requirements from Lion, you automatically put yourself in a position to improve your profit picture. Here's how:**

1 **You Save Time** • You can contract at one time, with a single dependable source, for all of your nitrogen fertilizer material requirements. And, of course, time saved today is reflected in your profits tomorrow.

2 **You Prevent Manufacturing Delays** • Formulation material that does not have consistent quality can slow down or delay your own production needlessly. With Lion's Quality Control, you can be sure of *quality* materials. The difference will show up in your profit column.

3 **You Solve Problems Quicker** • If you run into a formulation snag, Lion's highly trained Technical Staff will be ready to give you the kind of technical assistance that can only come from a leader. This aid can help improve your profit picture . . . and *it's yours for the asking.*

**DISTRICT SALES OFFICES: NATIONAL BANK OF COMMERCE BUILDING, NEW ORLEANS, LOUISIANA • SHEPHERD BUILDING, MONTGOMERY, ALABAMA**

**LION OIL COMPANY**

CHEMICAL SALES DIVISION — EL DORADO, ARKANSAS

Shovel-loading train of gondolas.

# Crude Sulphur

**for Industrial Use**

*from the properties of*

## Texas Gulf Sulphur Co.

75 East 45th Street • New York 17, N. Y.

*Producing Units*

- NEWGULF, TEXAS
- MOSS BLUFF, TEXAS
- SPINDLETOP, TEXAS
- WORLAND, WYOMING

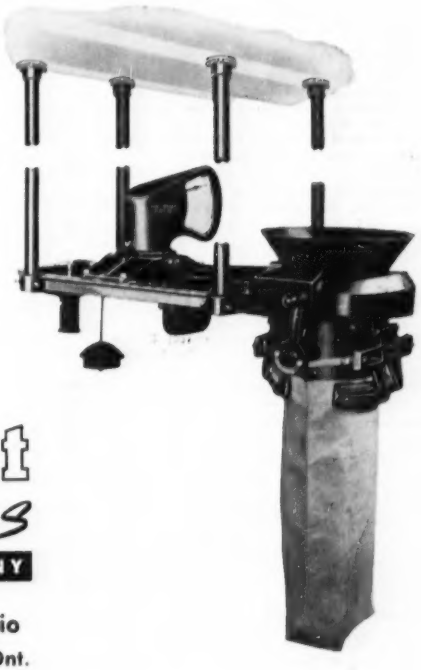
# EXACT WEIGHT Platform Scale

## *Provides Visible Indication for Fast, Accurate Readings*

This EXACT WEIGHT Platform Scale has a capacity of 500 pounds, yet provides outstanding speed and accuracy. A hydraulic damping mechanism brings weight indicator to rest quickly—and high-ratio visible indication enables operator to make an accurate reading at a glance. Indicator travel of three inches over and under is equivalent to three pounds over and under. Sturdily built, with permanent alignment of operating parts. Write for details on Model 4005-2.

## EXACT WEIGHT Sacking Scales

## Save Time, Product, Profit!



Sack, weigh, and visibly checkweigh in ONE operation! One simple operation does the work of three. Available in five different models for varied installations. Model 2229, shown, is designed for ceiling suspension. Write for complete information.

**Sales and Service from Coast to Coast**

Exact Weight Scales

*Better quality control*
*Better cost control*

**THE EXACT WEIGHT SCALE COMPANY**

**906 W. Fifth Avenue, Columbus 8, Ohio**
**In Canada: P. O. Box 179, Station S, Toronto 18, Ont.**

# COMMERCIAL FERTILIZER and PLANT FOOD INDUSTRY

ESTABLISHED 1910

February, 1955

Volume 90 No. 2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*What do we know about your business?*

# When you have Fertilizer Plant needs

Extensive research and investigation of *all* the facts are necessary to make the building of a fertilizer plant economically sound. Many years of experience in the fertilizer industry have made Harte engineers cognizant of the over-all picture to be considered in fertilizer plant design. Realizing that certain fundamentals must be followed while specializing the design of each plant, all possible facts are studied and adapted to produce a sound, enduring investment.

If you plan to build a fertilizer mixing plant, or an associated plant, the Harte organization of specialists can handle your complete job or any part, from original design to operating plant. Under the Harte System all steps — site study, planning, architectural, engineering, purchasing, construction management — are integrated, assuring smooth-working continuity. Assuring a saving in time and money. In fertilizer plant planning there's no substitute for experience. Call in the Harte organization for a discussion of your plans. There's no obligation.

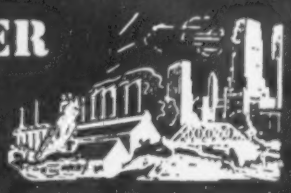
**JOHN J. HARTE COMPANY** | ENGINEERS CONSTRUCTION MANAGERS

**SPECIALISTS IN THE FOLLOWING PROCESSES:** • Solvent Extraction Systems • Sulphuric Acid • Vitamin Recovery • Synthetic Detergents • Insecticide Plants • Clay Processing • [redacted] • Paper Mills • Electrolytic De-Tinning • Lime and Cement • Rubber Products • Glass • Explosives • Petrochemicals • Food Canning Plants • Cotton Mills • Industrial Warehousing • Steam Generating & Power Plants • Milk By-Products • Naphthalene & Tar Plants

284 TECHWOOD DRIVE, N. W., ATLANTA • NEW YORK • HOUSTON • MEXICO, D. F. • HAVANA • WASHINGTON, D. C.

# JUST AROUND THE CORNER

By Vernon Mount



MORE THAN A YEAR AGO we forecast the trend which is now showing up in the Eisenhower messages - to keep up the welfare services, the slum clearance, the road building...but to pull in the states, counties, cities and private enterprise wherever possible. The suggestion that the Federal Government guarantee the finances back of these enterprises is naturally encouraging to all factors.

INVISIBLE FEDERAL DEBT, however, develops from these guarantees. They do not show in the Federal balance sheet, because they are separate enterprises. But should any of the projects go sour, they would promptly become an obligation of the US, and would then show. But meanwhile things get done at the level where they should be done.

AT THE LOCAL LEVEL the taxpayer can keep a better eye on the situation, as we have said before, and there is likely to be more fundamental soundness to the projects proposed. All of which makes good sense economically, politically and socially - as we see these things in the year 1955. Grandpa would turn over in his grave!

Yours faithfully

Vernon Mount

# in the bag

*it makes a more effective, better balanced, complete fertilizer*

# on the bag

*farmers can see that it's a finer quality product*

# added sales

***with Sul-Po-Mag***

*more sales for you and your dealers . . .*
*more profitable harvests for farmers*

**Sul-Po-Mag®**

Water-Soluble Double Sulfate of Potash-Magnesia
($K_2SO_4 \cdot 2MgSO_4$) 22% $K_2O$—18% MgO

*Sul-Po-Mag* is produced exclusively by the *Potash Division* for use in quality mixed fertilizers and is also bagged for direct application to the soil. It supplies a properly balanced combination of *sulfate of potash* and *sulfate of magnesium*. Soluble magnesium is so extensively used in magnesium-deficient crop-growing areas, it is often called the *fourth element* in the fertilizer bag. At Carlsbad, New Mexico, the *Potash Division* mines and refines these fine quality products for fertilizer manufacturers – Muriate of Potash, Sulfate of Potash and Sul-Po-Mag.

**potash division** · **INTERNATIONAL MINERALS & CHEMICAL CORPORATION** · **GENERAL OFFICES: 20 NORTH WACKER DRIVE, CHICAGO 6**

# A Completely New and Different PAYLOADER®

# ...years ahead in design, construction and performance !

## the NEW model HA

Thirty four years of pioneering experience by the manufacturer who has produced more complete tractor-shovel units than all others put together . . . more than three years of development and field-testing . . . this new HA model may well set new standards of mobile bulk materials handling performance for industrial operations.

## ...actual performance records prove amazing superiority!

**carrying capacity?**

TWICE AS MUCH as previous HA model; more than any other comparable size.

**lifting capacity?**

MORE THAN TWICE AS MUCH as previous; more than any other comparable size.

**digging capacity?**

MORE THAN TWICE AS MUCH as previous; more than any other comparable size.

**bucket capacity?**

16-2/3% INCREASE in (struck) capacity; 18 cubic feet PAYLOAD (heaped) capacity.

**dumping height?**

18 PERCENT INCREASE in maximum dumping height over previous "HA" PAY-LOADER model.

**turning radius?**

SHORTER TURNING RADIUS than before with no increase in width, height or wheelbase.

**safety features?**

SETS NEW STANDARDS of safety in load carrying and driver protection.

**production output?**

INCREASED 50 TO 100% over previous model; more than any other comparable size.

**accessibility?**

IMPROVED EASE OF ACCESSIBILITY of all service points for better maintenance.

**other features?**

BREAKOUT BUCKET ACTION with 40° TIPBACK; sealed brakes; improved steering; new solenoid starting controls; new ignition lock; hydraulic accumulator; sealed and pressurized hydraulic tank; double-acting rams; torque converter; improved bucket construction; dustproof distributor; hose connectors; sealed grease fittings; new pin lock design; improved ground clearance; increased drawbar pull; chrome-plated piston rods; new parking brake and many others. Send for new specification catalog.

**PAYLOADER®**

THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
700 SUNNYSIDE AVE. • LIBERTYVILLE, ILL.

Send me full information on the new Model HA

Name .....

Title .....

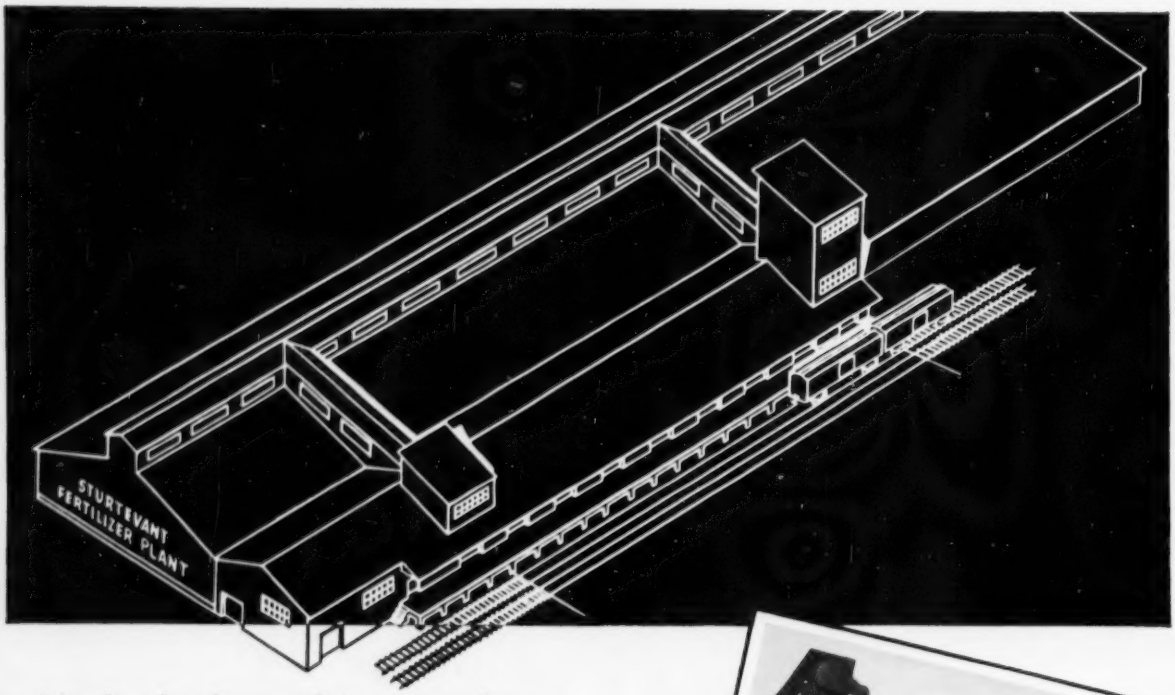
Company .....

Street .....

City ..... State .....

# LARGE OR SMALL

# STURTEVANT builds them all...




## Each designed to produce maximum Fertilizer output

For over 71 years, Sturtevant Mill Company has been closely associated with the fertilizer industry . . . designing and supervising the construction of complete plants, and building quality machinery from individual machines for specific applications to complete processes, that speeds up fertilizer output, reduces overall production costs.

A recognized leader in the industry, Sturtevant Mill with its vast fertilizer manufacturing experience and know-how can effect operating economies for you.

Whether you plan to build a new plant, modernize or buy new equipment, it will pay you to consult Sturtevant Mill. Our engineers, specialists in fertilizer manufacture, are available for consultation. Ask for their services, today. You will keep ahead with Sturtevant.

Continuous Den or
Batch Den and Excavator
for producing superphosphate.

## STURTEVANT MILL Company

111 CLAYTON STREET, BOSTON 22, MASSACHUSETTS

*what's* YOUR PROBLEM?

# *Better Glass?*
# *Better Grass?*

**Whatever your basic chemical need—look for the answer in Trona's complete line of BORON products for industry and agriculture**

Fine quality glassware and ceramics of strength, clarity and brilliance have a common ingredient with fields of lush, milk- and beef-producing pastures. They both depend on one or another of Trona's diversified line of Boron chemicals, vital to low cost, quality production in industry and agriculture. Uniformity from shipment to shipment, prompt delivery and a dependable source of supply are reasons why you will agree with the nation's leading producers that it is best to standardize on Trona® Boron products.

**BORAX**
Sodium Tetraborate

**V-BOR***
Refined Pentahydrate Borax

**TRONABOR®**
Crude Pentahydrate Borax

**PYROBOR®**
Dehydrated Borax

**BORIC ACID**
Orthoboric or Boracic Acid

**SODIUM PENTABORATE**

**BOROTHERM***
Soluble borate for fire-retardent water base paints

**BORO-SPRAY***
Soluble borate for agricultural deficiencies

**POTASSIUM PENTABORATE**

**BORIC OXIDE**
Anhydrous Boric Acid

*Trade Mark AP&CC

## American Potash & Chemical Corporation

TRONA
INDUSTRIAL AND AGRICULTURAL CHEMICALS
ESTON CHEMICALS

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• 99 Park Avenue, New York 16, N. Y.
• 214 Walton Building, Atlanta 3, Georgia
*Plants* • Trona and Los Angeles, California

• BORAX • POTASH • SODA ASH • SALT CAKE • LITHIUM & BROMINE CHEMICALS
and a diversified line of specialized AGRICULTURAL, REFRIGERANT and INDUSTRIAL CHEMICALS

CERAMICS • GLASS • FERTILIZER • INSECTICIDES • PULP & PAPER • REFRIGERANTS • DETERGENTS

# Biggest Campaign is Now Selling Your

# in Fertilizer History Farm Customers...

**Just about every** time farmers turn the pages of a farm magazine this year of 1955, they'll be turning to full page advertisements of one or more ARCADIAN® products. ARCADIAN UREA 45 – Nitrogen Solutions for Direct Application – *American* Nitrate of Soda – A-N-L® Nitrogen Fertilizer and others. Full pages and half pages that smack the reader right in the eye with outstanding advantages of these ARCADIAN Fertilizers that are as modern as tomorrow's agriculture. These selling messages will be seen by millions of farmers every month of the fertilizer season. Some 1500 local newspapers will also carry ARCADIAN advertising urging farmers to buy.

All this, plus continued radio campaigns on big stations, and small stations, too, are putting ARCADIAN products in the minds of your customers – to move more ARCADIAN products. As an ARCADIAN Distributor you can move them at a profit through your place of business.

This year it will pay better than ever to stock and sell ARCADIAN Fertilizers getting this intensive advertising support. Get your full quota of aids to help you sell easier, faster, more. The time is ripe – the time to stock ARCADIAN is right now. For full information, fill in the coupon below.

- ☐ **UREA 45 Fertilizer** *45% Nitrogen Pellets*
- ☐ **12-12-12 Granular** *Fertilizer*
- ☐ **American Nitrate of Soda** *Improved Granular*
- ☐ **A-N-L® Nitrogen Fertilizer** *Pelleted*

**Nitrogen Solutions**

- ☐ *Non-pressure* **URAN* and FERAN***
- ☐ *Low-pressure* **NITRANA® and URASOL***

*Trade-Mark

**NITROGEN DIVISION** Allied Chemical & Dye Corporation
**40 Rector St., New York 6, N. Y.**

Please provide me full information on products I have checked in the box at the left.

☐ Please send me facts on advertising coverage in my area.

NAME _____

FIRM _____

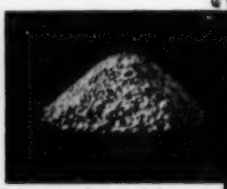
ADDRESS _____

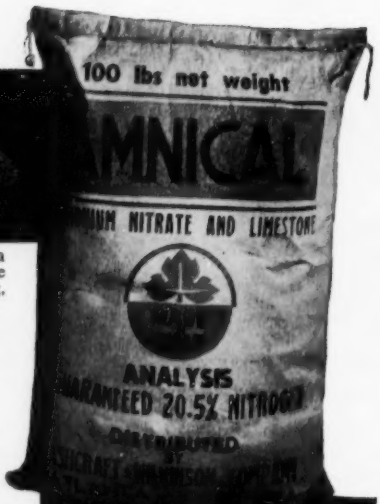
CITY _____ STATE _____

**NOW AVAILABLE**

# AMNICAL

(AMMONIUM NITRATE LIMESTONE)






## 20.5% NITROGEN
## DOUBLE DUTY PLANT FOOD

Amnical is manufactured in a solid white pellet form to assure easy handling, free flowing, and resistance to moisture.

**AMNICAL** contains 20.5% nitrogen which will result in higher-than-ever yields of protein rich crops of all kinds.

**AMNICAL** contains about 40% Calcium Carbonate with Magnesium Carbonate.

**AMNICAL'S** nitrogen is in approximately one-half nitrate form making it quick-acting and immediately available to growing crops.

## *Made in Italy*

**AMNICAL'S** nitrogen is in approximately one-half ammonia form—resistant to leaching, slow but steady acting, gradually feeding the crop throughout the entire growing season.

**AMNICAL'S** white color is your guarantee of the purity of the raw materials employed in its production.

**STOCK UP ON AMNICAL TODAY**

*Exclusive Distributors*

## ASHCRAFT-WILKINSON CO.

ATLANTA, GEORGIA

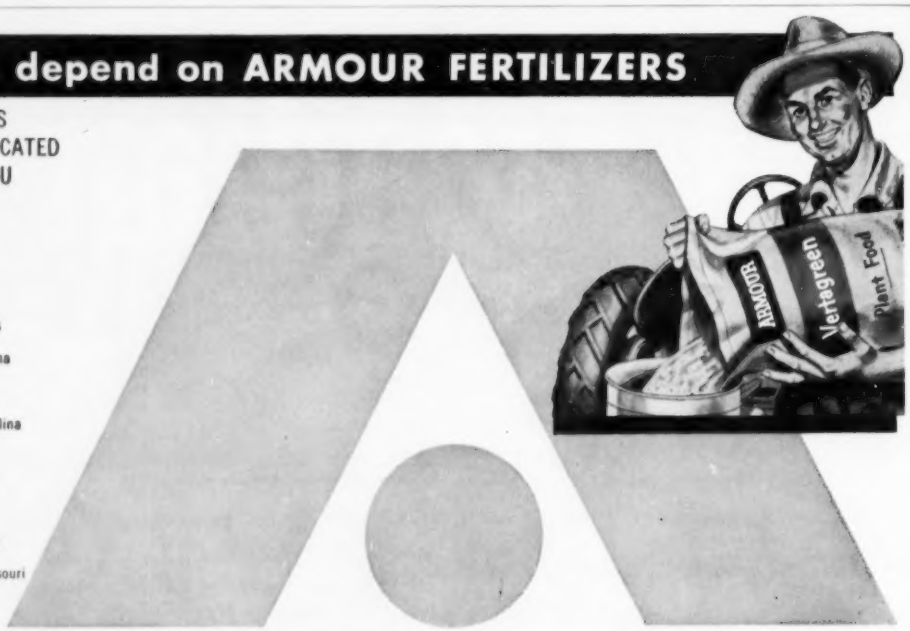
NORFOLK, VA. • CHARLESTON, S. C. • TAMPA, FLA. • JACKSON, MISS. • COLUMBUS, OHIO

## Farmers depend on ARMOUR FERTILIZERS

31 FACTORIES
CONVENIENTLY LOCATED
TO SERVE YOU

Albany, Georgia
Atlanta, Georgia
Augusta, Georgia
Baltimore, Maryland
Bartow, Florida
Birmingham, Alabama
Carteret, New Jersey
Chicago Heights, Illinois
Cincinnati, Ohio
Columbia, South Carolina
Columbus, Georgia
Dallas, Texas
East St. Louis, Illinois
Greensboro, North Carolina
Houston, Texas
Jacksonville, Florida
Jeffersonville, Indiana
Memphis, Tennessee
Montgomery, Alabama
Nashville, Tennessee
New Orleans, Louisiana
Norfolk, Virginia
North Kansas City, Missouri
Presque Isle, Maine
Sandusky, Ohio
Siglo, Tennessee
Waterloo, Iowa
Wilmington, North Carolina
Winona, Minnesota

Also sales offices in Havana, Cuba, and San Juan, Puerto Rico

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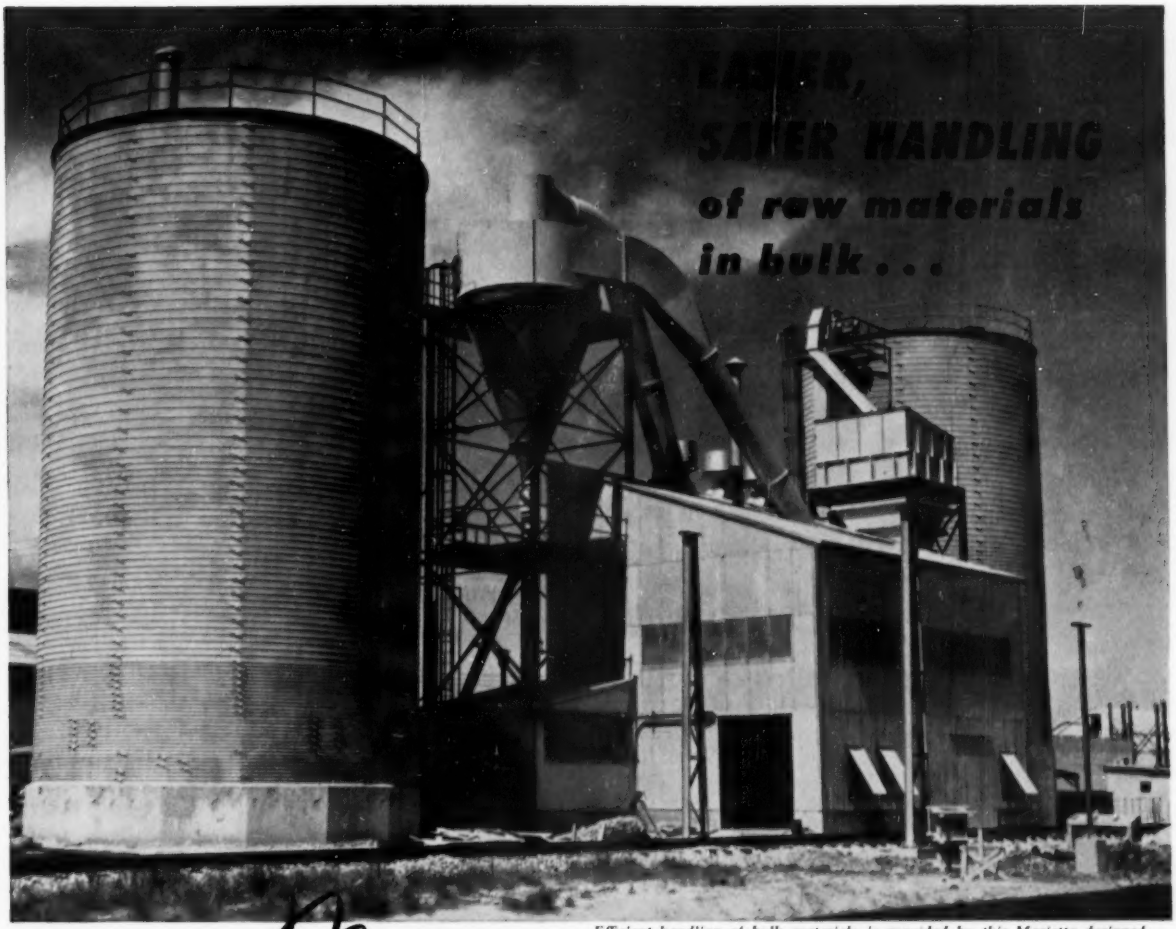


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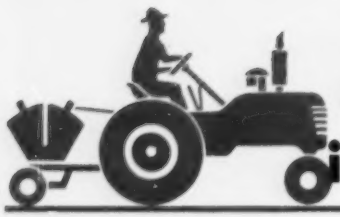

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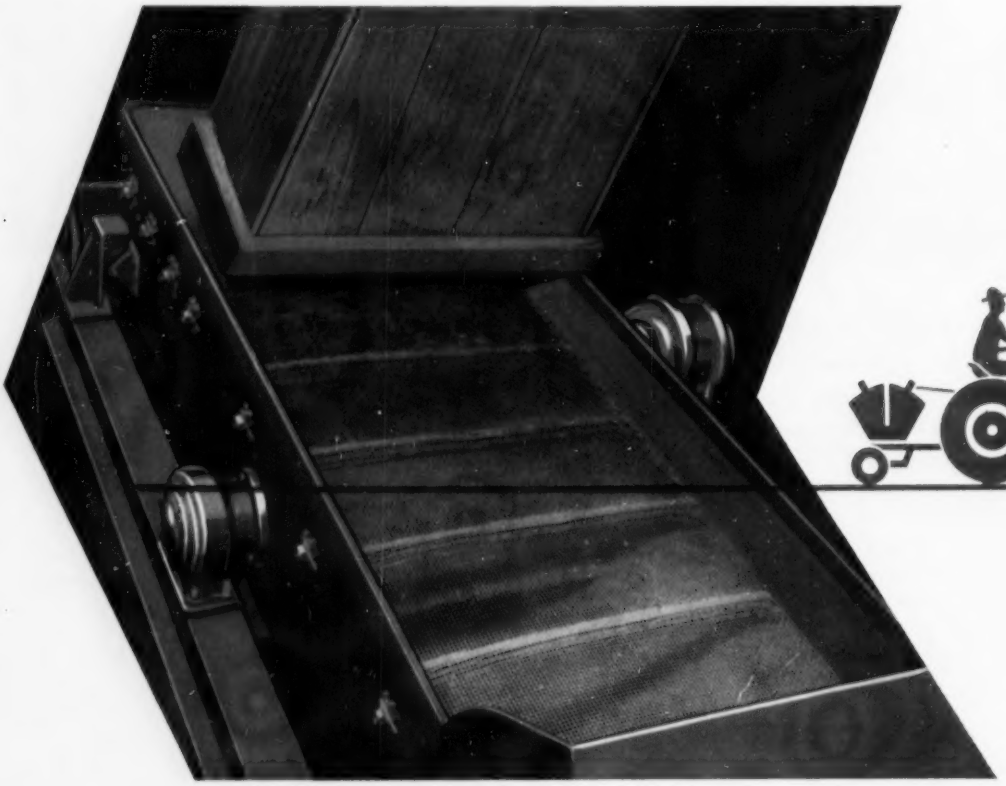

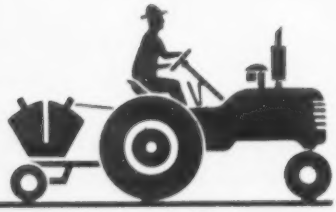

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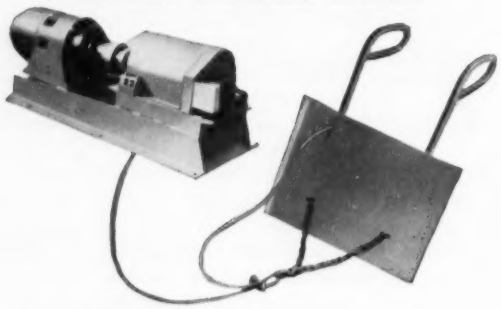

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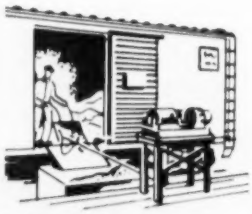

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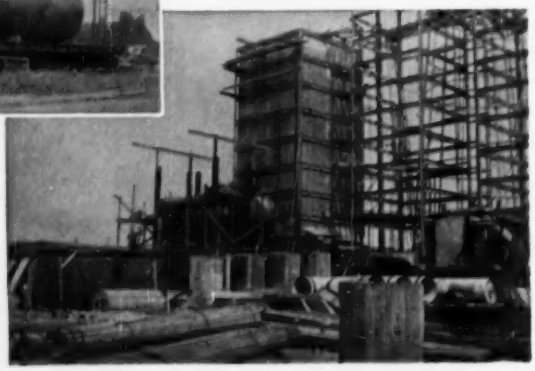

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## NFA Announces New Irrigation Movie

"Weather or Not," a new educational motion picture which dramatically portrays how farm profits can be boosted by the fertilizer-irrigation team, is now available for distribution by The National Fertilizer Association.

The new 16 mm. sound-color movie, which runs 21.5 minutes, is the second educational picture produced by NFA during 1954. The other, The Big Test, which describes the approved method of taking soil samples to be used in determining plant food deficiencies in the soil, was released in December. Both pictures were produced by NFA's Robert H. Engle.

Cooperating in the production of Weather or Not was the Sprinkler Irrigation Association. The advisory committee on the film included representatives of the American Society for Horticultural Science, the American Society of Agricultural Engineers, and the American Society of Agronomy.

Professional actors tell the story of Weather or Not, which is designed principally for use in the humid regions of the U. S. east of the Rocky Mountains. A farmer and his son, both dairymen, who operate adjoining farms, compete with each other to see which can produce the most profitable pasture. As the story unfolds, it introduces the various requirements for profitable operation of an irrigation system.

Another recent NFA movie, Cash in on Corn, has proved extremely popular since its release two years ago, and bookings now are being scheduled for the spring season.

As with other educational movies produced by NFA, Weather or Not is expected to be used widely in school and college classrooms, and by county agents, fertilizer and irrigation equipment dealers and other agricultural workers in meetings of farmers.

All NFA movies may be borrowed free of charge by sending a request to the Association at 616 Investment Building, Washington 5, D. C. Persons or groups wishing a permanent copy of Weather or Not may arrange to purchase one through NFA at the actual printing cost of $80.

## *It Seems to Me*

**by BRUCE MORAN**

**It is not often I get excited about a business man's biography, but "Two Ears of Corn"*—the life story of the fabulous Charles H. MacDowell, written by his wife, is one for everyone in the industry to read. For his story is really the story of our industry, almost from the beginning.**

**His interest stemming from a horror of waste, he induced his company, Armour, to go into fertilizer. He mixed demonstration batches in a mortar box to prove his point. He invented new ways to make and sell. He was a pioneer in reasearch within the industry and on the farm.**

**Some of it is pretty blunt stuff, and I can imagine there are folks who winch a little when they read it. But it is a good picture of an industry struggling through its growing pains as taken from the notes and the memory and the diaries of a man who lived it.**

**Charles MacDowell began as a printer's devil. He wound up consorting with the leading statesmen of the world. But he was a fertilizer man through it all.**

**Two Ears of Corn by Way of the Chemical Kettle*, by Claire Leavitt MacDowell, published by The Pequot Press, Stonington, Connecticut; $5.

## NFA-APFC Convention To Be NPFI Preliminary

Plans have been approved for a preliminary convention of the National Plant Food Institute at The Greenbrier, White Sulphur Springs, W. Va., June 12-15, 1955.

Presidents Russell Coleman of The National Fertilizer Association and Paul T. Truitt of the American Plant Food Council announced that the preliminary convention will constitute the annual (1955) meetings of the membership of the two fertilizer industry trade groups, which will be consolidated officially effective July 1, 1955.

The staffs of both organizations will make the arrangements for the joint convention and the program will be announced soon.

Members of the Council and NFA are being sent reservation forms immediately.

## INDUSTRY CALENDAR

| Date | Organization | Place | City |
|---|---|---|---|
| Feb. 17-18 | Midwest Soil Conference | Palmer House | Chicago, Ill. |
| Feb. 27-28 | Southern Fertilizer Safety | Jung Hotel | New Orleans, La. |
| Mar. 7-9 | NACA | Chase-Park Plaza | St. Louis, Mo. |
| Mar. 30-Apr. 2 | ACS, Div. Ag. & Food Chem. | | Cincinnati, Ohio |
| June 13-15 | NFA-APFC | Greenbrier | White Sulphur Springs, W. Va. |
| June 28-30 | Pacific N.W. Conference | Boise Hotel | Boise, Idaho |
| July 14-15 | Southwest Grade Hearings | Buccaneer Hotel | Galveston, Texas |
| Oct. 17-18 | Fertilizer Safety Section | La Salle Hotel | Chicago, Ill. |

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*January* *1955*

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The new unit is adjacent to the USI sulfuric acid installation which came onstream in September, 1953. Thus two of the most important chemicals for agriculture are available from this plant site.

The USI ammonia plant goes onstream in time for heavy springtime demand for fertilizer nitrogen. It is an economical source for consumers in Illinois, Indiana, Ohio, Michigan, Wisconsin, Minnesota, Iowa and Missouri.

Included in the products to be available from this plant are both commercial and refrigeration grades of anhydrous ammonia and all formulations of ammonium nitrate — ammonia solutions. Special formulations can be tailored to the user's requirements.

For further information about how this new plant can serve you, please address your nearest USI office, or communicate with Chemical Sales, U. S. Industrial Chemicals Co., 99 Park Ave., New York 16, New York.

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# PERSONNEL PRACTICES *in Alabama Fertilizer Plants*

*By* ELLSWORTH STEELE, WILLIAM R. MYLES *and* SHERWOOD C. MCINTYRE

**Working on a grant-in-aid by Alabama Polytechnic Institute, the authors made this study among Alabama plants. Your editors feel that the plants studied may well be typical of a large segment of the fertilizer industry nationally, and should therefore be of vital interest to all our readers from coast to coast. You will observe that the data permits comparison of large plants with small; single with multiple-plant organizations; plants with personnel departments with those having no such activity; union plants with non-union.**

Effective personnel administration is as vital to the efficiency of a fertilizer plant as fertilizer itself is to the efficiency of a farm. The personnel practices employed in a fertilizer plant, or in any other type of plant, determine worker morale and greatly influence output and profits. For this reason, American management is giving increased attention to its policies affecting employer-employee relations.

This article surveys the personnel practices of Alabama fertilizer plants. The industry is small but strategic in a state which places as much emphasis on agriculture as does Alabama. The state's 51 plants have an annual capacity of more than one million tons of fertilizer, which places Alabama ninth among the 48 states.[1] In actual consumption, however, Alabama ranks sixth, using 1,040,500 tons in 1953. This total amount permitted Alabama farmers to apply an average of 415 pounds of fertilizer to each harvested crop acre that year.[2]

In the fertilizer plants, man-hours expended on each ton of output have dropped as total production has climbed. These gains have been the result of continuous technological improvements. The new machinery and new processes in turn have changed the conditions under which men work. Despite these improvements, three factors continue to characterize work in fertilizer plants.

First, most jobs are temporary. In the late fall raw materials are secured, processed and then stored until March and April when they are bagged and sold. It is true that the development of the cattle industry in Alabama has increased the fall sales of fertilizer for pastures, but the industry still remains highly seasonal. As a result, most workers are always strictly temporary employees. Second, the level of skill required of employees is low. Therefore, wages are modest and rapid turnover is thus encouraged. Third, the work itself is often dirty and some men are not able to adapt themselves to it. These factors make it difficult to establish good human relations in the plants. They present a challenge to the management of fertilizer companies.

The purpose of this study is to discover how the leaders of the fertilizer industry in Alabama have met this challenge and to analyze some of the factors which have influenced them. Practices used by Alabama fertilizer plants will be presented in the following pages. They will be compared with practices used by plants in all types of industries in the state. In addition, practices in selected groups of fertilizer plants will be examined to determine what influence four factors may have had on their formation. These factors are: variation in (1) size, (2) company structure (single plant versus multiple plant), (3) personnel specialization (plants with versus plants without full-time personnel workers and/or an organized personnel department) and (4) unionization.

The study is based on interviews with management officials and upon two questionnaire surveys. The first survey, which covered plants in all types of industries, was made in 1952. It resulted in returns from 464 plants —a 51 percent response. The second survey was conducted in 1954 and was confined to fertilizer plants. From this survey, 27 returns (54 percent) were received in time to be included in this analysis. The size characteristics of the two groups of plants are shown in Table 1. The 27 fertilizer plants employ a total of

**TABLE I**
**Characteristics of Plants Surveyed**

| Plants | Number of Plants | Number of Employees | Median Number of Employees | Range in Number of Employees |
|---|---|---|---|---|
| Fertilizer Plants | | | | |
| All Plants | 27 | 780 | 20 | 6-85 |
| Size: | | | | |
| Small | 16 | 227 | 15 | 6-26 |
| Large | 11 | 553 | 50 | 35-85 |
| Company Structure | | | | |
| Single Plant | 19 | 448 | 17 | 6-85 |
| Multiple Plant | 8 | 332 | 44 | 8-75 |
| Personnel Specialization | | | | |
| Absent | 19 | 607 | 26 | 6-85 |
| Present | 6 | 113 | 18 | 8-40 |
| Unionization | | | | |
| Non-union | 18 | 411 | 17 | 6-85 |
| Union | 8 | 359 | 44 | 26-75 |
| Plants in All Industries | 464 | 220,270 | 129 | 2-29,000 |

780 workers. The median sized plant has only 20 employees. Overall the plants range from 6 to 85 employees. The 464 plants in all types of industries are much larger, on the average. They employ 220,270 workers, with a median of 129, and a range of 2 to 29,000. The greater median size and the wider variation in size of the 464 plants are the two differences which stand out.

A note on method is in order before the results of the study itself are examined. Questionnaires are always subject to misinterpretation. Indeed, several of the questions used in the 1952 survey were modified in the 1954 study for this reason. (See Charts 1-4.) Also, respondents may answer hurriedly and, therefore, possibly inaccurately. In addition, the factors analyzed which influence personnel practices are so interrelated that their individual effects cannot be isolated. Finally, the casual relationships between these factors and the practices are necessarily uncertain. For instance, do personnel directors persuade managers to install job evaluation programs; or do managers hire personnel men to administer job evaluation programs which they have already installed?

## WHAT PERSONNEL PRACTICES ARE IN USE IN ALABAMA FERTILIZER PLANTS?

The questionnaires used in the survey included approximately 30 personnel practices. These may be grouped into four categories: employment, wage and salary, communication, and employee benefit practices. These specific practices were selected to give a cross-section of personnel techniques in use. Some are obviously more important than others and some of them are not necessarily "good" practices.

The percentages of fertilizer plants and of all plants which use each of the practices investigated are shown in Charts 1 through 4. The actual wording of the 1954 questionnaire is given. To understand the differences in practice revealed in these charts, the reader will need to bear in mind that the fertilizer plants are not nearly as large as the other plants, and that a smaller proportion of them are unionized or have specialists available to assist in meeting personnel problems. These differences are significant because they tend to influence personnel practice.

**CHART 1**
**Use of Selected Employment Practices by Alabama Plants**

| | Percent of Fertilizer Plants | Percent of All Plants |
|---|---|---|
| Do you use an application blank in hiring new employees? | 15 | 64 |
| Do you request that applicants give references? | 69 | 80 |
| Do you as a general practice interview applicants when hiring? | 93 | 95 |
| Do you use tests in hiring employees? | 4 | 25 |
| Do you use maximum hiring ages?* | 30 | 64 |

* Question in survey of all industries included minimum as well as maximum hiring ages.

**Employment practices.** Chart 1 shows that a worker applying for a job in an Alabama fertilizer plant will almost certainly be interviewed before he is put to work. Usually he will be asked to give references, but not to make out an application blank. Only rarely will he be given tests, and then, according to plant officials, only if he is seeking a clerical or managerial position. Approximately one company in three will hold him in a maximum age limit.

The same worker applying for a position in the "average" Alabama plant, as represented by the 464 plants surveyed, will find a higher proportion using each of the five employment practices. The differences are noteworthy in the use of application blanks and tests. The difference in use of maximum hiring ages shown is probably exaggerated, because the questions answered by "all plants," but not by the fertilizer plants, included **both** minimum **and** maximum ages.

Plant officials interviewed say that characteristics of the fertilizer industry and of its men explain the slight use made of application blanks. At given times unskilled laborers—largely Negroes — must be hired quickly to meet changing plant requirements. Because these men must be processed swiftly and because most of them are to be temporary employees, only a minimum of information is needed or sought. Skilled employees, on the other hand, are secured by promotion from the ranks of the temporary employees who have worked for the company over several years. The company is already familiar with these men. Thus in neither case does the company feel the need for an application blank. It is possible that careful use of information usually sought through application blanks might enable fertilizer plants to improve their selection of new employees and thus reduce the absenteeism and turnover which plague the industry.

Although most fertilizer plants indicate that they want applicants to give references, the employers interviewed play down their usefulness. They report that references are used more for clerical and managerial employees than for production workers. One man says that his plant rarely asks production workers for references and then doesn't check them. Indeed, he declared, "We don't know here in the office when a man is hired or fired, until his payroll comes up at the end of the week." The difference between fertilizer and all types of plants in the use of references apparently is due to three factors: the pressure to hire additional men quickly to meet seasonal needs; the low level of skill required; and the small size of fertilizer plants which leads them to avoid routine checking whenever possible.

Fertilizer plants very seldom use tests. This fact is of special interest because tests frequently can be helpful in reducing turnover, which is so high in fertilizer plants. One plant official queried concerning tests says that he "had never thought of using them." Another, however, states that the national management of his firm has employed outside consultants to develop tests for managerial and technical personnel and has begun using them. The small size of fertilizer plants is a major deterrent to the use of tests because tests are expensive unless their cost can be

spread over many employees. That most plants do not have specialized personnel capable of administering a testing program is probably another factor.

In their answers to a detailed question on maximum hiring ages (not included in the charts), the fertilizer plants give maximums for manual workers ranging from 45 to 60 years. For clerical workers the span is from 35 to 65 years, and for supervisors, from 35 to 60 years.

The temporary character and low skill requirements of most production jobs explain the lack of emphasis on age. As one official puts it, "If you're only going to hire a man for a short stretch, you're not too much interested in his age." However, another manager declares that he prefers men from 25 to 35 years old because they can move up to become clerical and supervisory workers. Even in the plant, he wants younger men because he feels that they are more adept at performing their duties and are safer employees than **newly hired** older men.

**Wage and salary and related practices.** According to Chart 2, the newly-hired employee of an Alabama fertilizer plant soon learns that he is to be paid by the hour. Only a few plants use piece rates or other incentive schemes. The new worker also finds that his wage rates are seldom set by job evaluation and seldom supplemented by profit sharing—that is, unless he is a supervisor or an executive. Seniority is ordinarily weighed, however, when management reaches a decision concerning his promotion, layoff, or rehire. He won't be merit rated in any of the fertilizer companies but he may be called upon to work beyond the first shift, especially in the peak season.

Only one of the wage and salary practices given in Chart 2 is used by a higher percentages of the fertilezer plants than of the plants in all types of industries. It is profit sharing. In each case except seniority the difference in the percentages reported by the two groups of plants is large.

Most fertilizer plants do not use incentive systems because many of their jobs, such as filling, sewing, and trucking, are machine-paced. Due to turnover, absenteeism and changes in demand, men must be shifted frequently from job to job. This movement makes work measurement difficult. Even when men stay on one job, it is hard to measure what goes through the line as shifts are made back and forth from quantity items to slow, "drug store orders." Supervisors assume the responsibility for the quantity of output, basing their requirements on experience. Despite these limitations, one large company has recently installed an incentive system in an attempt to reward increased effort and thus reduce turnover and retain younger men.

The small fertilizer companies with their closer personnel relationships have made greater use of profit sharing than the usual Alabama plant, especially for supervisory and executive personnel. Yet, one national fertilizer concern recently has turned from a limited profit sharing plan to a sales incentive plan in order to place greater emphasis on individual achievement.

Personal rates rather than job rates predominate in the fertilizer plants. Usually there are only two broad production-job classifications, "skilled" and "unskilled," although specific job duties vary. As has been noted, the men are shifted frequently because of turnover, absenteeism and managements' policy of training men in all jobs. In such a situation it is difficult to pay men on the basis of the specific job they are performing; therefore, job evaluation which focuses on job rates has little applicability.

Unions press fertilizer companies to follow seniority, but the men interviewed feel that this pressure has brought little change in practice. They point out that employers in seasonal industries naturally tend to favor men who have seniority, and the experience it represents, because experience cuts down a new man's training time. This savings is especially important in a seasonal industry. Thus, in the words of one official, union emphasis on seniority "has not been particularly a handicap."

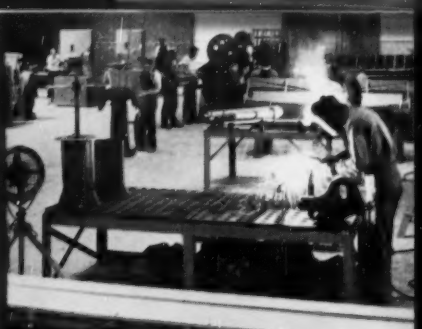
That none of the fertilizer plants uses employee rating requires an explanation. It lies in the size of the plants and the seasonality of their business. Small employers in all types of industries feel that they know enough about their workers without a systematic rating program. This feeling among fertilizer plant managers is bolstered by the fact that there are only a few job classifications in their plants and few permanent workers, in whom, naturally, they are most interested.

All of the spinning and weaving plants included in the "all industries" group use multiple shifts. Their inclusion largely accounts for the difference between fertilizer plants and "all plants" in use of this practice. Any of the fertilizer plants may work extra shifts during their peak seasons, but those making sulphuric acid must operate on a con-

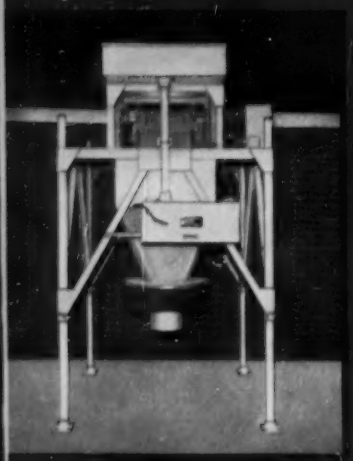
**CHART 2**
**Use of Selected Wage and Salary and Related Practices by Alabama Plants**

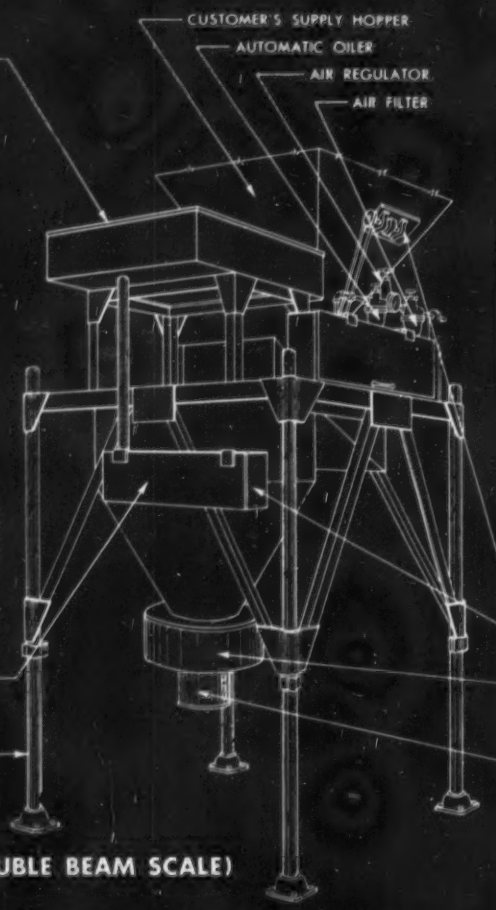
| | Percent of Fertilizer Plants | Percent of All Plants |
|---|---|---|
| In paying your employees, do you use an incentive or piece work plan relating pay to production, sales, etc.?* | 12 | 56 |
| Do you have a profit sharing program approved for tax purposes?** | | 11 |
| a—for hourly paid and clerical workers | 12 | |
| b—for supervisors | 32 | |
| c—for executives | 35 | |
| Do you have a job evaluation program (not the same as time study) to set equitable wage rates?* | 12 | 40 |
| Do you use seniority as a factor in promotion, layoff or rehire? | 68 | 77 |
| Do you use a systematic employee (merit) rating system? | 0 | 23 |
| Does your firm usually work more than one shift? | 30 | 52 |

* Wording as slightly revised for fertilizer study.
** Breakdown added in fertilizer study.



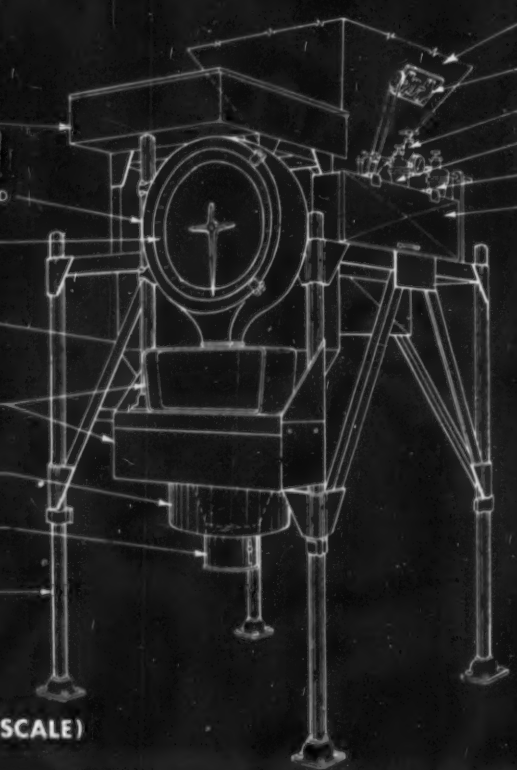
**THE PLANT THAT DEMAND BUILT**—Union's I & C Bagger is manufactured in this new Inglett & Corley plant, located in Augusta, Ga. Increased capacity insures prompt delivery of all models.





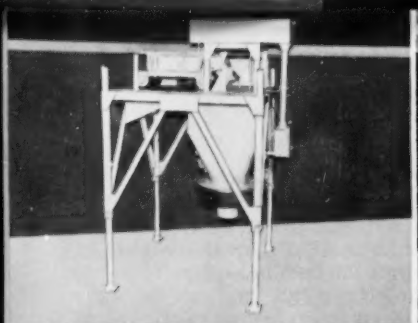

## MODEL UB 100-A (DOUBLE BEAM SCALE)

for accurate high-speed weighing and packing of granular materials


CUSTOMER'S SUPPLY HOPPER
HOPPER VIBRATOR SUPPLIED WITH MACHINE
DUST SEALED SCALE BOX WITH OIL SEALED LEVER SYSTEM
AIR REGULATOR
AUTOMATIC OILER
AIR FILTER
DUST SEALED AUTOMATIC CONTROL BOX
CALIBRATED DOUBLE FACE DIAL HEAD
VISIBLE DIAL CUT-OFF ELIMINATES NECESSITY OF CHECK WEIGHING
INSTANTANEOUS CHANGE FROM ONE WEIGHT UNIT TO ANOTHER BY SELECTOR SWITCHES
ALL SCALE PARTS DUST SEALED
FLEXIBLE DUST SHIELD
ADJUSTABLE BAG SPOUT
ADJUSTABLE TUBULAR LEGS

## MODEL UB 101 (DIAL SCALE)

for finer weight tolerances and visible weight check



**SIMPLIFIED INSTALLATION**—Shipped completely factory assembled and checked. Can be installed in a matter of hours. Adjustable legs may be compacted. Unit can be readily moved into position and quickly adjusted to the supply hopper.

**TRAINED UNION TECHNICIANS** — The I & C Bagger is installed and serviced by Union Bag machinery experts. These technicians are based so that they are available for immediate assistance if needed.

**500 TONS PER 8-HR. DAY**—Completely automatic filling and weighing cycle. Close weight tolerance. Low in both initial and operating costs. Make your own comparison with any other packer.

## *MODELS OF UNION'S I&C BAGGER HELP OBTAIN*

# RECORD SAVINGS

## *IN THE AUTOMATIC WEIGHING AND BAGGING OF FEED, FERTILIZERS AND GRANULAR CHEMICALS*

Finer accuracy, increased operating efficiency and convenience, and greater ease of installation have been incorporated in new Models UB 100-A and UB 101.

Performance records prove that the I & C Bagger substantially reduces packaging labor costs, increases production, and can bring about important economies in the cost of the Multiwall bags themselves.

### SAVINGS OF OVER $50 A DAY

Typical of how the I & C Bagger improves packaging efficiency is the experience of a small fertilizer plant which is saving over $50 a day in reduced manpower and increased production, with a single machine. This manufacturer's newly developed capacity to service and load trucks faster has enabled him to add many new accounts.

### ADD NEW UNITS; CONVERT MORE PLANTS

A major producer of plant food installed ten additional I & C Baggers and has just ordered two more. Another leading manufacturer has now converted nine plants to the I & C Bagger. Still another processor credits this outstanding new packaging unit with transforming a previously inefficient plant into a profitable one.

**I&C Bagger** *Automatic Weighing and Filling Machine for Open Mouth Bags*

Manufactured by **INGLETT & CORLEY, INC., AUGUSTA, GA.**

*Exclusive sales agents:*

**UNION BAG & PAPER CORPORATION** *Woolworth Building, New York 7, N. Y.*

TRADE MARK UNION

**MULTIWALL PACKAGING MACHINERY DEPARTMENT**

for finer weight tolerances and visible weight check

tinuous basis. Moreover because superphosphate has become a major constituent of most fertilizers, some plants run their superphosphate department extra shifts to keep up with other departments.

**Communication and related practices.** New employees in Alabama fertilizer plants encounter varied methods of getting messages back and forth between them and their managements. Most plants have special programs to get safety information across to them and a third have training programs, according to Chart 3. A smaller proportion have full-time personnel workers, however, and very few have personnel departments. In nearly a third of the plants there are unions to speak for the workers and in a slightly larger number, formal grievance procedures for them to use. A fourth of the plants encourage workers to pass their ideas on up to top management through a formal suggestion plan. A somewhat larger proportion call in outside consultants to help them discover answers to personnel problems. Only a small proportion carry on personnel research or ask employees to bid on posted job vacancies. On the other hand, nearly half of the companies try to profit by the advice of departing workers as it is gleaned through exit interviews.

Outside consultants are used by a higher percentage of fertilizer plants than of plants in "all industries." The situation is reversed for each of the remaining communication practices. Differences between the two groups of plants are especially great in the use of organized personnel departments, training programs, exit interviews and grievance systems.

Small size is one reason for the low percentage of fertilizer plants which have specialized in handling personnel problems. Small firms find it convenient to parcel out work among plant superintendents, office managers and sales managers who handle it in addition to their other duties. Then too, much of the work done by local men in single plant firms is handled by officials in company headquarters in multiple-plant firms which are prominent in the fertilizer industry. Nevertheless, some branch officials feel that specialization in the branches will eventually be necessary in order to cope with such problems as pensions.

One plant manager interviewed reports that his company is giving increased attention to safety practices since a bad accident experienced recently resulted in increased workmen's compensation premiums.

Fertilizer plants are so small, according to plant officials contacted, that they do not attract union organizers as strongly as many other types of plants. Furthermore, their seasonal character makes the establishment of a stable labor organization difficult. The lower percentage of unionization in fertilizer plants than in all plants helps explain the lower proportion of fertilizer plants with job posting and grievance systems which unions ordinarily favor.

Small size also accounts for the low percentage of fertilizer plants with formal suggestion plans. In plants with few employees, workers with ideas can take them directly and immediately to their "boss" because he is readily accessible.

Nearly half of the fertilizer plants and the vast majority of all plants surveyed have exit interview programs. The difference between the two groups is apparently traceable to characteristics of the fertilizer industry. Most of the workers who are separated are laid off in a group in seasonal slumps. Many managers feel that there is "not much point in talking with them," unless they are clerical workers or part of the small permanent staff. (It does seem possible, however, that their availability for work in the next seasonal upturn might be conveniently checked in an exit interview and the pressure for hasty and indiscriminate hiring later on reduced.) Furthermore, managers say that during the work-peaks many of the temporary workers just "walk off the job" giving no opportunity for exit interviews. The same factors explain why only a small proportion of the fertilizer plants with exit interview programs keep records. They would call for paper work usually avoided by small companies. One official interviewed put the answer this way. The office force is so small that anything unusual about anyone's departure is easily remembered. Changes among the more numerous unskilled and temporary production workers are so common that they arouse little interest.

The fertilizer industry in Alabama apparently leaves personnel research activities to the home plants of national companies. As a result, a smaller proportion of fertilizer than of the plants in "all industries" report such programs. In the use of

**CHART 3**
**Use of Selected Communications and Related Practices by Alabama Plants**

| | Percent of Fertilizer Plants | Percent of All Plants |
|---|---|---|
| Do you employ a full-time person to handle personnel matters such as employment, records, safety, employee benefits | 23 | 34 |
| Do you have an organized personnel department? | 4 | 33 |
| Do you carry on a safety program (conferences, inspection, displays etc.)? | 64 | 82 |
| Do you have a training program for workers or supervisors (on-the-job, apprenticeship, vestibule, foremanship, etc.)? | 31 | 56 |
| Do you post vacancies and request employees to bid for them? | 12 | 21 |
| Do you sponsor a suggestion plan? | 23 | 33 |
| Do you make it a practice to interview persons leaving your employ to learn the causes of turnover?* | 46 | 82 |
| Do you keep records of exit interviews? | 25 | 39 |
| Do you have a procedure with established steps to permit your employees to air their grievances? | 35 | 62 |
| Is your establishment unionized in part or in whole? | 31 | 43 |
| Does your firm actively carry on personnel research (analysis of turnover, causes of accidents, etc.)? | 15 | 30 |
| Do you call on outside consultants for assistance in your personnel program? | 27 | 15 |

* Wording as slightly revised for fertilizer study.

consultants the opposite situation prevails, with no obvious explanation.

**Employee benefit programs.** An employee who is injured in almost any Alabama fertilizer plant finds first aid equipment at hand. In some plants he will also find that provisions have been made for a company doctor to treat major injuries. In half of the plants group insurance—life, hospital and accident — is also made available, sometimes at company expense, sometimes at employee expense. Fewer than a fourth of the plants have pensions, though, and even fewer rent company houses to employees or make even indirect provisions for prepared meals for their employees while at work. None of the plants has a credit union.

A higher percentage of the plants in "all industries" than of the fertilizer plants report the use of each of the benefit practices in Chart 4. The most substantial differences are found in the provision of prepared meals, group insurance and credit unions.

The small size of the fertilizer plants and the seasonality of their business largely explain these differences. Some fertilizer plants provide simple cooking facilities and rent them to concessionaires (usually employees' wives) who prepare the food. But most of them believe that the capital outlay is too great for an elaborate system which could be used fully only during seasonal peaks. There are no credit unions because in small plants composed mainly of unskilled temporary workers, little of the necessary saving is done. As one official stated, most of the fertilizer workers would be potential borrowers, not lenders. Some of the companies do make advances, however, to partially meet the need which credit unions fulfill.

Some fertilizer companies have houses which they rent to their plant managers and to night watchmen, but most of them have not entered the field. Because of the seasonal character of their work, they must locate in communities which can supply additional workers as they are needed. Thus, they avoid the isolated locations in which so many textile firms built their mill villages.

**CHART 4**
**Use of Selected Benefit Programs by Alabama Plants**

| | Percent of Fertilizer Plants | Percent of All Plants |
|---|---|---|
| Are prepared meals made available to your employees on the premises?* | 8 | 26 |
| Do you furnish first aid, health or medical treatment to your employees on the premises?* | 85 | 91 |
| Do you have a group insurance plan (health, accident, life, etc.) other than workman's compensation as required by law?* | 50 | 81 |
| Do you have a pension plan (other than social security)? | 23 | 33 |
| Do you have a credit union? | 0 | 15 |
| Do you rent company houses to your employees? | 15 | 28 |

* Wording as slightly revised for fertilizer study.

## FORCES MOULDING PERSONNEL PRACTICES IN FERTILIZER PLANTS

The specific personnel techniques in use in any plant are the products of many interrelated forces. In order to obtain some measure of the influence of four such factors, Table 2 was constructed. In this table, comparisons are made between groups of fertilizer plants which differ in size, company structure, personnel specialization and unionization.

Table 1 shows that the small plants (that is, those with fewer than 30 employees), the plants of single plant firms, the plants without personnel specialization and the non-union plants outnumber the plants with which they are compared. The large plants (naturally), the branch plants of multiple plant firms, the unionized plants and, (surprisingly) the plants without personnel specialization, are larger than the plants with which they are compared.

Analysis of the data in Table 2 reveals that the branch plants make wider use than the single plant firms of 25 to 31 practices. The unionized plants report higher percentages than the non-union plants for 20 of 30[3] practices. Large plants exceed small plants in the use of 16 of 31 practices and the plants with personnel specialization have higher percentages than the plants without for 15 of 29 practices.[4] Thus of the four factors, company structure appears to be the most important and personnel specialization and plant size the least important in moulding personnel practices.

A closer examination of Table 2 calls attention to those specific personnel practices which are particularly affected by **each** factor.

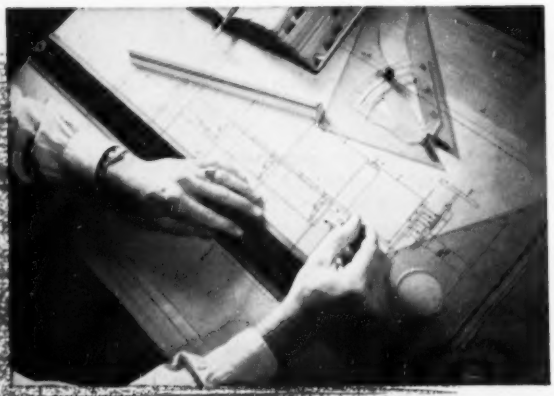
**Size:** On the basis of differences between the percentages reported, size appears to be a major factor in the adoption of 14 of the 31 practices. Differences of 20 percent or more occur in these cases, with the small plants leading in four instances and the large in ten. Indeed, in the use of seniority, unionization and outside consultants size appears to be an especially significant factor inasmuch as the differences here are more than 30 percent. It should be noted, however, that only the small plants rent company housing.

**Company structure:** Company structure seems to have an important influence on the use of 15 practices each of which are used by at least 20 percent more branch plants than single plant firms. For eight practices, differences of more than 30 percent are found. These practices which apparently are most affected by company structure are: training, job posting, exit interviews, greivance systems, unionization, personnel research, group insurance and pensions. In explanation, management officials interviewed argue that branch plants and large plants are especially vulnerable to union organization. And union emphasis on job posting, grievance systems, insurance plans and pensions is well known.

**Personnel specialization:** The importance of personnel specialization in determining personnel practice is suggested by the 11 practices in which differences of at least 20 per-

# from the drawing board to complete plant

*for complete dry mixing or superphosphate plants*



Extensive research and planning are necessary to assure maximum efficiency of a fertilizer plant. Each plant must be individually planned and constructed to meet the specific requirements of the location. Expert supervision must be given to the installation of equipment and construction of the building to realize full operating efficiency. From the original plan to the operating plant, a competent staff, with broad, practical experience, guide your plant through the design, engineering, manufacturing, fabrication and construction phases. Any or all of these services are available to you at one source with Davidson-Kennedy Company. In addition, they stand ready upon completion to train any personnel in plant operation. Davidson-Kennedy Company, manufacturers of a complete line of fertilizer machinery, offer you an engineering service second to none in the industry.

COMPLETE FERTILIZER PLANTS • FERTILIZER MIXING PLANTS

Acidulating Units
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Granulating Plants
Batching Systems (in line and cluster hoppers)
Continuous Ammoniating Plants

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cent occur. In eight cases it is the plants with, and in three cases the plants without, personnel specialization which have the highest percentage. Plants without specialization report percentages more than 30 percent higher than plants with specialization for multiple shifts and unionization. Approximately equal, but opposite, differences are found in the use of exit interviews and group insurance.

**Unionization:** The possible influence of unionization is seen in the differences of 20 percent or more which are found in the use of 11 practices. In nine instances, the union plants and in two instances, the non-union plants have the higher percentages. The greatest impact of unionization seems to be on the use of five practices—seniority, job posting, exit interviews, grievance systems and personnel research—in which cases the differences are 30 percent or more. This result is to be expected. Unions ordinarily stress seniority, job posting and grievance procedures. Exit interviews are useful in administering seniority when workers are recalled. Finally, companies negotiating with unions often find it necessary to emphasize fact collection. In the use of full-time personnel workers, the difference is also more than 30 percent, but it is the non-union plants which lead.

The data in Table 2 also show that size, company structure, personnel specialization and unionization are interrelated in their influence on personnel practices. For instance, large plants, branch plants, plants with personnel specialization and unionized plants, **all** report higher percentages than their counterparts in the use of seven practices. These are: job evaluation, safety programs, exit interviews, grievance systems, personnel research, outside consultants and pensions. On the other hand, small plants, single plants, plants without personnel specialization and non-union plants have the higher percentages for interviewing of applicants. Furthermore, the small plants, single plants and non-union plants make greater use of full-time personnel workers than do their counterparts. Thus, in nine of the 30 cases, each of the four factors appears to influence practice in the same direction.

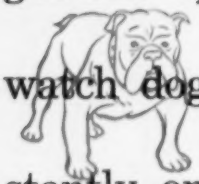
National companies and national unions apparently influence most personnel practices in the same di-

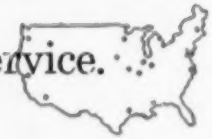
**TABLE 2: Percentage of Alabama Fertilizer Plants Classified By Size, Company Structure, Personnel Specialization and Unionization Which Use Selected Personnel Practices, 1952.**

| Personnel Practices | Size | | Company Structure | | Personnel Specialization | | Unionization | |
|---|---|---|---|---|---|---|---|---|
| | Small | Large | Single Plant | Multiple Plant | Absent | Present | Non-union | Union |
| **Employment practices** | | | | | | | | |
| Use application blanks | 13 | 18 | 11 | 25 | 16 | 17 | 17 | 13 |
| Request references | 69 | 70 | 74 | 57 | 74 | 67 | 78 | 57 |
| Usually interview applicants | 94 | 90 | 95 | 88 | 100 | 83 | 94 | 88 |
| Use tests in hiring | 0 | 9 | 0 | 13 | 5 | 0 | 0 | 13 |
| Use hiring age limits | 31 | 27 | 26 | 38 | 26 | 50 | 33 | 25 |
| **Wage and salary and related practices** | | | | | | | | |
| Pay by the incentive system or piece rate system | 13 | 10 | 5 | 29 | 5 | 33 | 11 | 14 |
| Have a profit sharing program | | | | | | | | |
| a. For hourly and clerical workers | 19 | 0 | 11 | 17 | 6 | 33 | 17 | 0 |
| b. For supervisors | 33 | 30 | 28 | 43 | 33 | 33 | 29 | 43 |
| c. For executives | 38 | 30 | 32 | 43 | 37 | 33 | 33 | 43 |
| Use job evaluation | 6 | 20 | 5 | 29 | 11 | 17 | 6 | 29 |
| Use seniority in promotion, layoff, rehire | 56 | 89 | 61 | 86 | 72 | 50 | 53 | 100 |
| Use employee rating system | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Usually work more than one shift | 19 | 45 | 21 | 50 | 37 | 0 | 22 | 50 |
| **Communication and related practices** | | | | | | | | |
| Have full-time personnel workers | 31 | 10 | 26 | 14 | | | 33 | 0 |
| Have an organized personnel department | 7 | 0 | 0 | 14 | | | 6 | 0 |
| Carry on a safety program | 56 | 80 | 58 | 86 | 63 | 83 | 61 | 86 |
| Have a training program | 31 | 30 | 21 | 57 | 26 | 50 | 28 | 43 |
| Post job vacanies for bidding | 7 | 20 | 0 | 43 | 11 | 0 | 0 | 43 |
| Sponsor a suggestion plan | 31 | 10 | 21 | 29 | 16 | 33 | 17 | 29 |
| Use exit interviews | 38 | 60 | 37 | 71 | 37 | 83 | 33 | 86 |
| Keep records of exit interviews | 17 | 33 | 14 | 40 | 29 | 20 | 17 | 33 |
| Have a formalized grievance procedure | 25 | 50 | 21 | 71 | 32 | 50 | 17 | 86 |
| Unionized in part or whole | 6 | 64 | 16 | 71 | 37 | 0 | | |
| Carry on personnel research | 6 | 27 | 0 | 50 | 16 | 17 | 6 | 38 |
| Employ outside consultants | 13 | 50 | 26 | 29 | 21 | 50 | 28 | 29 |
| **Employee benefit programs** | | | | | | | | |
| Prepared meals made available to employees | 0 | 20 | 0 | 25 | 11 | 0 | 6 | 13 |
| Furnish some first aid, health or medical treatment | 94 | 73 | 84 | 88 | 84 | 83 | 83 | 88 |
| Have a group insurance plan | 53 | 45 | 33 | 88 | 47 | 80 | 47 | 63 |
| Have a pension plan (other than OASI) | 13 | 40 | 5 | 71 | 21 | 33 | 17 | 43 |
| Have a credit union | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Rent company houses to employees | 25 | 0 | 16 | 13 | 16 | 17 | 17 | 13 |

# Here's Why Bemis is Your Best Multiwall Paper Bag Source...

Since 1858, Bemis has SPECIALIZED in making Bags. Bemis buys tremendous quantities of kraft paper and so can get the "pick of the crop." Bemis laboratories are the watch dogs of paper quality. Bemis engineers work constantly on new and better bags for diversified products. Bemis' twelve multiwall plants are strategically located to give unexcelled service.





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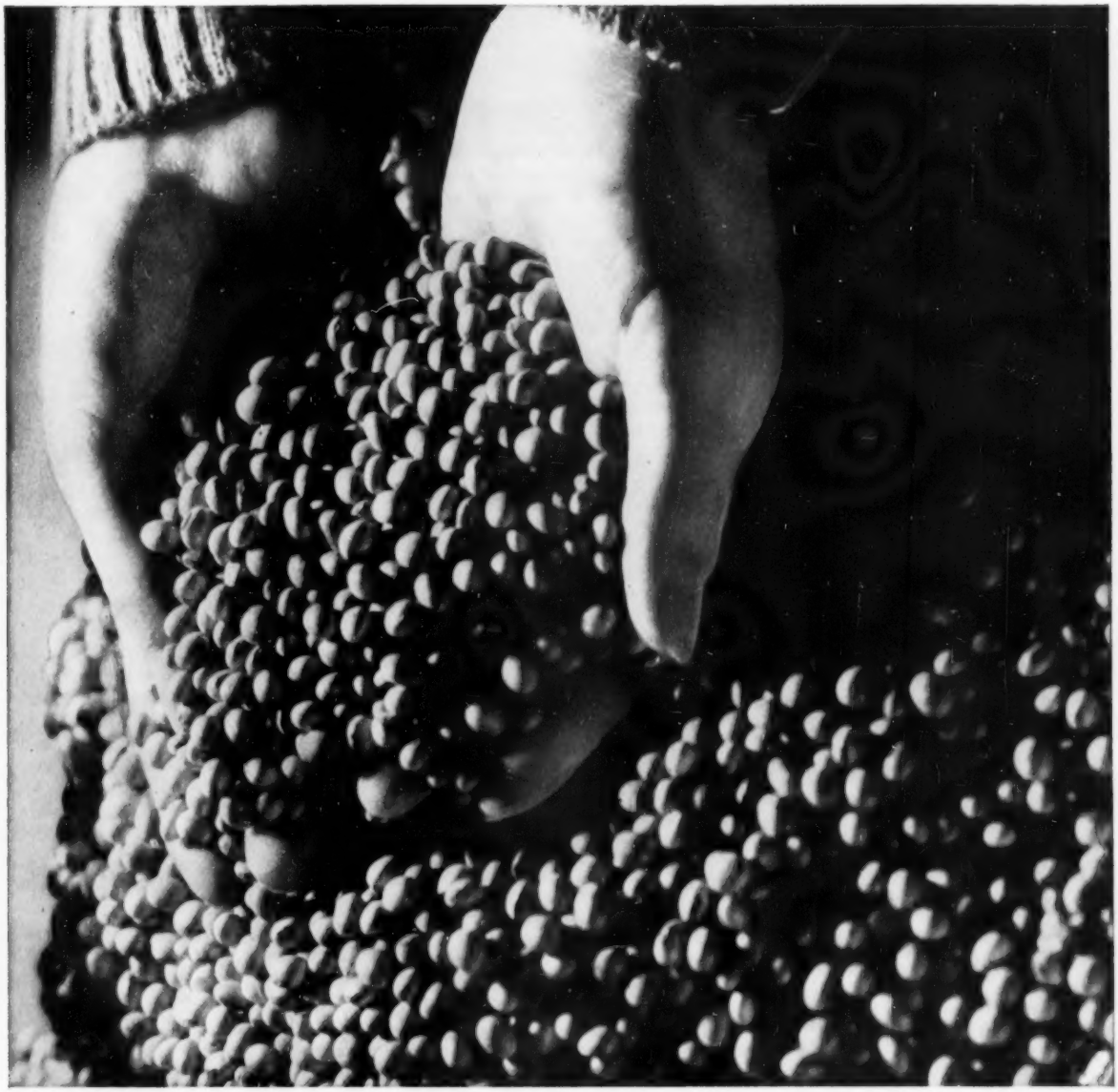

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Potash, an important component of these fertilizers, enriches the soil, improves crop quality, builds resistance to disease, and increases the crop yield. United States Potash Company high-grade muriate of potash has the highest $K_2O$ content, and is free-flowing and non-caking—important advantages in the production of fertilizers that make today's soybean crops the finest ever grown.

**HIGRADE MURIATE OF POTASH 62/63% $K_2O$**
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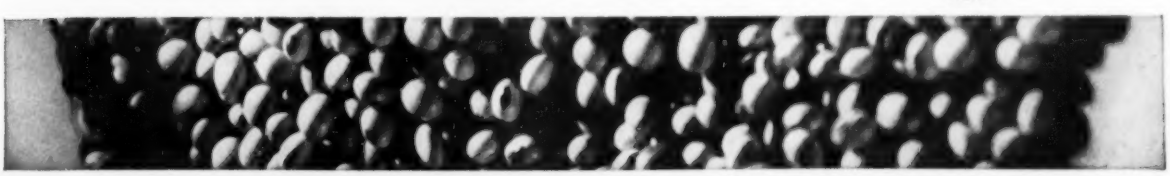
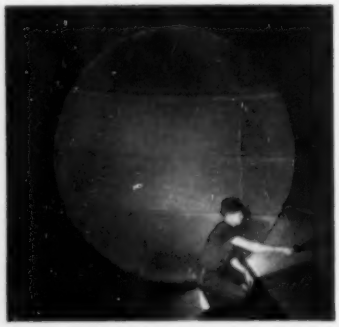


# Liquid Fertilizer TANKS



**The Economical Answer to Fertilizer Handling Problems**

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One kind of tank—the rubber-lined tank—has been proved most economical and dependable. Acme-Fisher has had long experience in this field, supplying leading chemical companies with standardized acid-handling equipment.

Write, wire or phone for quotation on your needs. We fabricate our own steel, save two profits on every job.

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rection. At least the figures in Table 2 show that when the percentages for branch plants exceed those for single plants, the percentages for unionized plants also exceed those for non-union plants, and vice versa. Only in the use of four of the 30 practices—application blanks, hiring age limits, profit sharing for hourly and clerical workers, and personnel departments—does this relationship fail to hold true.

Greater size and unionization also seem to have similar effects on personnel practices. Large plants and unionized plants together either "lead" or "lag" behind small plants and non-union plants, except in the use of eight practices.

The influence of greater size and of national concerns run parallel except in 11 of 31 practices. Branch plants and plants with personnel specialization together either "lead" or "lag" behind single plants and plants without personnel specialization in all but 10 of 29 practices. Large plants and plants with personnel specialization differ together from small plants and plants without personnel specialization except in 15 of 29 practices.

## CONCLUSIONS

From the detail survey and interview data thus presented, there emerge several important conclusions. First, only six of the 31 personnel practices studied are used by a majority of the fertilizer plants. These practices are: references, employment interviews, seniority, safety programs, first aid, health or medical treatment and group insurance. At the other extreme, fewer than 10 percent of the fertilizer plants use five practices: testing, employee rating, personnel departments, prepared meals and credit unions.

Second interviews with company officials reveal that the industry faces a serious problem in high turnover and absenteeism. Study of the personnel practices used by fertilizer companies suggests that fuller and more careful use of exit interviews, records of exit interviews, application blanks, and, possibly, tests could reduce turnover and absenteeism. These techniques might enable management to rehire a greater proportion of the better employees who are laid off after each seasonal peak. They might also improve the selection of new employees by weeding out those most likely to quit or to be absent frequently.

Third, Alabama fertilizer plants make greater use than do plants in all types of industries of two practices: profit sharing and outside consultants. The remaining 29 practices surveyed are used more widely by the other plants. Indeed, the differences are substantial (25 percent or more) in the case of eight practices: application blanks, piece rates or incentive plans, job evaluation, personnel departments, training, exit interviews, grievance systems and group insurance.[5] These differences reflect important characteristics of the fertilizer industry. Its plants are small. Their employment fluctuates greatly season by season. The wage structure is simple and the skill requirements modest. Furthermore, fertilizer plants are not as widely unionized as "all plants," nor do they make as great use of personnel specialization. All of these factors are consistent with infomal and simple patterns of personnel relations.

Finally, the specific personnel practices which apparently are most affected by differences in size, company structure, personnel specialization and unionization have been presented above. Of these four factors, company structure seems to have the greatest influence on personnel practices, and personnel specialization the least. Interestingly, the influence of national companies on personnel practices seems to closely paralled that of unions, according to the data given in Table 2. The influence of greater size and of unionization also seem to be closely related.

1. Walter Scholl, "A Look at the Fertilizer Industry—1952," **National Fertilizer Review**, April-May-June, 1954, p. 12.
2. John F. Gale, "1953 Fertilizer Consumption Reaches Record Level," **National Fertilizer Review**, April-May-June, 1954, p. 18.
3. Unionization is now used as a classifying criterion, hence only 30 practices remain.
4. Full-time personnel workers and personnel departments are now used as classifying criteria.
5. Maximum hiring ages might be added, but the difference shown in Chart 1 is probably exaggerated as has been noted before.

## U. Of Minnesota Releases Soils, Fertilizer Bulletins

Two new bulletins from the University of Minnesota give a picture of soils and their fertilizer needs.

The first, "Guide to Fertilizer Use in Minnesota," presents a broad, yet rather detailed look at fertilizers, their plant food values, grades, ratios, needs of Minnesota soils and finally a key to higher crop yields. Intended as a general guide by its Extension and Soils Department authors, the 32-page bulletin describes fertilizers and their methods of application.

The last 12 pages of the bulletin are devoted to fertilizers for individual crops with tables and examples for each. This bulletin is listed as Extension Bulletin 277, and is available through the Agricultural Extension Service, University Farm, St. Paul 1, Minn.

The second bulletin is "Soils of Minnesota," an eight-page general identification leaflet on the major soil types of the state. It contains, in its center section, a multi-colored map showing the different soils of Minnesota's 53,800,000 acres. Each soil type is then described in the bulletin. Ask for Extension bulletin 278 by P. R. McMiller.

## Sales Tax Exemptions Proposed In Arkansas

Exemption of feed, seed and fertilizer from the Arkansas sales tax was recommended by Governor Faubus in his inaugural address. Estimates of how much the exemption would cost in state revenue loss vary from $600,000 to $6,000,000. He said he would ask the Legislature to tighten regulations to prevent abuse in reporting sales of these commodities.

## NAC Moves Quarters In Washington

Effective Feb. 1, the National Agricultural Chemicals Association moved its offices from 910—17th St., N. W., to Associations Building, Suite 603-4, 1145—19th St., N. W., Washington 6, D. C. Telephone remains Sterling 3-2833.

# USI *Nitrogen Plant Goes into Production*

A new $7,000,000 plant for the production of synthetic ammonia and fertilizer nitrogen compounds, was formally dedicated in Tuscola, Ill., January 21, by U. S. Industrial Chemicals Co., a division of National Distillers Products Corporation, marking another step forward in the parent company's goal to be among the leading U. S. Chemical companies by 1960.

Representatives of government, industry and agriculture were on hand to witness the release of the first tank car of anhydrous ammonia for direct application to the soil, to Central Illinois Fertilizer Co., Tuscola, distributor in the agricultural area surrounding the plant.

Fred Jones, Mayor of Tuscola, made the welcome address. Dr. K. D. Jacob, U. S. Department of Agriculture, Beltsville, Md., spoke on the importance of fertilizer nitrogen to mid-west agriculture. On hand to accept the first car for direct application were these Central Illinois Fertilizer officials: C. R. Ware, President; S. L. Victor, Secretary and Treasurer; and Percy C. Stackhouse, Vice President and General Manager.

Representing U. S. Industrial Chemicals Co., and National Distillers Products Corporation at the ceremonies were: John E. Bierwirth, President; Dr. Robert E. Hulse, Vice President and Director of the Chemical Divisions; Roy Coppedge, Vice President; Lee A. Keane, Vice President, U. S. Industrial Chemicals Co.; Warren Johnson, Manager of Chemical Sales; Lawrence C. Byck, Jr., Assistant to Manager, Chemical Sales.

The USI Ammonia Plant at Tuscola is adjacent to the USI sulfuric acid plant, which came onstream in September, 1953. Thus, two of the most important chemicals for agriculture are available from this plant site. Both plants were located at Tuscola to integrate with National Petro-Chemicals Corporation, a joint enterprise of National Distillers Products Corporation and Panhandle Eastern Pipeline Co. Natural gas from Panhandle is the basic raw material for the widely-used chemicals ethyl alcohol, ethyl chloride, ethyl ether, polyethylene. As an example of planning for efficient production, by-product hydrogen from Petro flows to USI for ammonia manufacture, and also to the ethyl chloride process. Spent sulfuric acid from the alcohol unit is returned to the USI plant from which it came. The plant is located at the junction of three railroads and two main highways at Tuscola, providing flexibility and economy in transporting materials.

Production capacity of the new ammonia plant will be 50,000 tons per year of anhydrous ammonia. The plant includes facilities for the conversion of part of the ammonia into nitric acid which is transformed into ammonium nitrate by reaction with more ammonia. In turn, the ammonium nitrate is used in the manufacture of nitrogen solutions composed of nitrate and ammonia in water.

USI goes onstream in time for heavy springtime demand for fertilizer nitrogen. Consumption of fertilizer nitrogen is increasing enormously in the middle-western states which Tuscola will serve—Illinois, Indiana, Ohio, Michigan, Wisconsin, Minnesota, Iowa and Missouri.

## Smith Expands Coverage For Emulsol Surfactents

Charles Albert Smith, Ltd., headquartering at 356 Eastern Avenue, Toronto, Ontario, Canada has expanded its representation of Emulsol Chemical Corporation, Chicago, for the entire Dominion of Canada in the sale and distribution of Emulsol's line of surface active agents.

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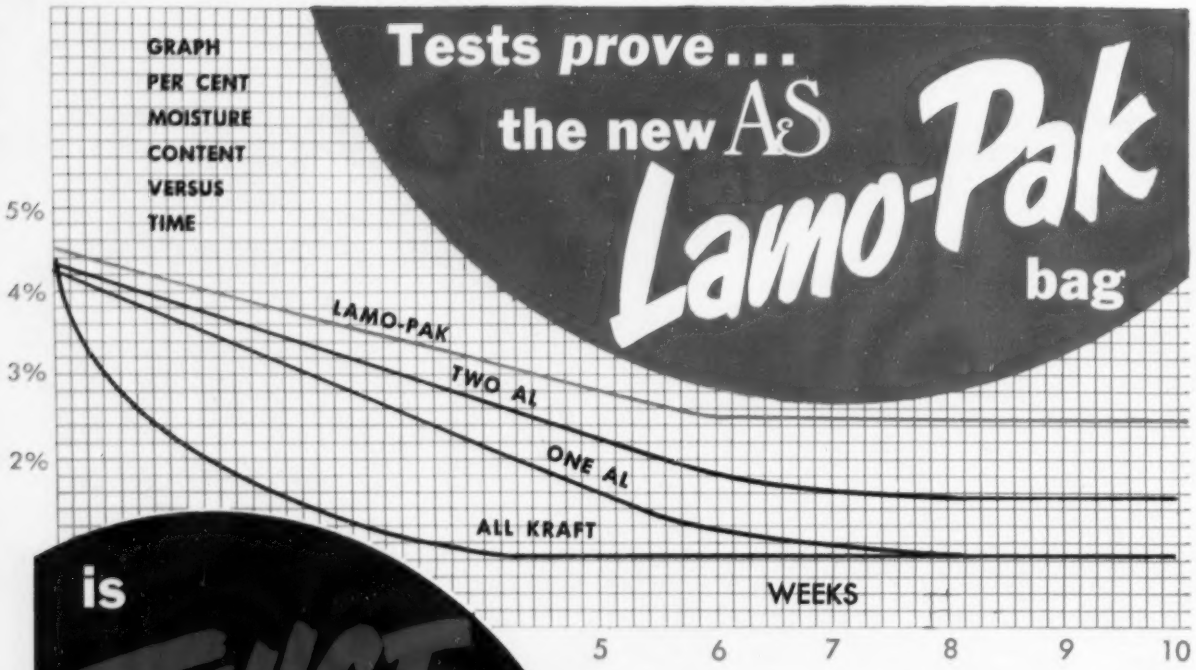


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# NORTHERN CHEMICAL BUILDING AMMONIA PLANT IN MAINE

Announcement by James E. Totman, president of Northern Chemical Industries of Searsport, Me. and Baltimore, Md. stated that, as of January 6, plans covering N.C.I.'s entry into the anhydrous ammonia industry have been completed. Preliminaries have been underway since about a year ago when the Company was granted a Certificate of Necessity in the amount of approximately $9 million.

This new $9 million addition to to New England's chemical industry was handled by White, Weld & Company, investment bankers with principal offices in New York City, Boston and Chicago. These funds are being provided through the sale of first mortgage bonds, subordinated debentures and common stock.

Northern Chemical Industries was founded in 1943 as an affiliate of the Summers Fertilizer Company, Inc., Baltimore, an old established manufacturer of mixed fertilizers, operating nine plants located in New Burnswick, Maine, Pennsylvania, Maryland, North and South Dakota. Thus, N.C.I. will have, through Summers, a captive requirement of nitrogen representing 48% of the plant's rated capacity.

Several other unusual advantages are involved—location adjoins Searsport's deep water harbor, thus permitting economical handling of imports and exports; to date it is the only plant in North America with integrated mixed fertilizer, superphosphate and other raw material manufacturing facilities; and it will be the first plant using exclusively the Texaco-Hydrocarbon Research process for producing ammonia synthesis gas from bunker "C" fuel oil by partial oxidation with oxygen. This latter process is in use by several interior plants utilizing natural gas. Since the latter is economically unavailable for Searsport, bunker "C" fuel oil will be utilized as the prime source of hydrogen and power. The nitrogen will, as in all other plants, be obtained from the air.

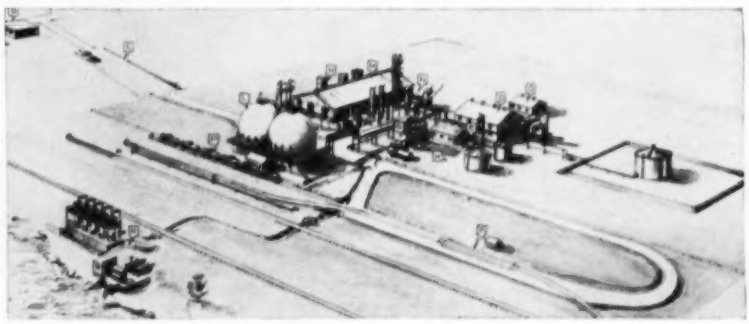
The Girdler Company, a division of the National Cylinder Gas Co., has been awarded the prime contract to erect a 125 ton per day anhydrous ammonia plant, a 60 ton per day nitric acid plant, a complete nitrogen solutions plant along with a 7500 KW power plant. Thus, this new project will be completely self-sustaining.

Mr. Totman stated that, of the approximately 43,000 tons of ammonia produced per year, about 18,000 tons will be used in the production of some 32,000 tons of nitrogen solutions generally used in the manufacture of mixed fertilizers. The balance of the ammonia will be sold to the sulfite pulp producers, a large number of which are located in close proximity to Searsport. A smaller amount will be available for general industrial use throughout New England. N.C.I., already the largest producer of ammonia sulphate and ammoniated superphosphate in New England, will itself use the balance of the production. Presently, in addition to fertilizer chemicals, N.C.I. also manufacturers and distributes via tank trucks to the pulp and paper producers in the area liquid alum. Now that an economical source of anhydrous ammonia is available, these same customers have indicated keen interest in changing their older lime-using process to that of the more modern anhydrous ammonia process. High transportation costs have been a deterrent to wider spread industrial use of anhydrous in both New England and the Maritime Provinces.

Thus far, the use of anhydrous ammonia for direct application to the soil has not been practiced in New England as in other parts of the country. The typography of the area does not lend itself as well to this particular use as the Midwestern plains but, with ammonia readily available from the Searsport plant, it is believed that farmers in the area to be served will materially increase their nitrogen consumption via the various derivitives that N.C.I. expects to make, such as nitrogen solutions and sulphate of ammonia.

N.C.I. recently elected three new directors to its Board, two of whom are well known New England industrialists—C. M. Hutchins, president of the Bangor & Aroostook Railroad and former president of the New England Council, and James T. Baldwin, treasurer of C. H. Sprague & Son Company, Boston. The third, A. F. C. Van den Bergh, director general of Diamond Fertilizer & Chemical Company of London, England, a long time associate of Mr. Totman's various interests, will act as the Company's foreign representative. Other officers of the Company are F. L. Litty, vice president & general manager of the Searsport works; R. E. Fraser, Baltimore, vice president; Dr. C. L. Carpenter, vice president in charge of development, formerly connected with W. R. Grace Co., Colgate-Palmolive Co., and Standard Oil Co.; J. C. Totman, Bangor, vice president in charge of sales; N. K. Totman, Baltimore, treasurer; W. A. Fessler, Baltimore, secretary. Frank P. Preti, attorney of Portland, Maine is the Corporation's clerk and assistant secretary.

Artist's concept of anhydrous ammonia plant being erected at Searsport, Maine for Northern Chemical Industries, Inc.



# GRACE DEDICATES TENNESSEE AMMONIA PRODUCTION UNIT

Officials of Grace Chemical Company and Swift & Co. participated in a brief ceremony marking the shipment of the first tank carload of anhydrous ammonia from Grace Chemical's new Memphis petrochemicals plant. Swift & Co. representatives, headed by U. C. Ellis, general superintendent of the Plant Food Division, accepted delivery of the car from John Carriere, plant manager.

The $20,000,000 Memphis nitrogen plant is the first manufacturing unit of Grace Chemical Company which was formed in 1952 as a subsidiary of W. R. Grace & Co. Production of ammonia was begun at the plant, at Woodstock (near Memphis), on December 21.

Samuel W. Anderson, assistant secretary of Commerce, was principal speaker at the formal dedication program of the plant January 6.

The decision of W. R. Grace & Co. to form Grace Chemical Company and to make its first unit an anhydrous ammonia-urea plant was reached after a lengthy, detailed, and comprehensive study carried out in the years after the close of World War II. That study convinced the Company's management that the United States chemical industry, and particularly the field of petrochemicals, enjoyed an enormous growth potential possibly unrivalled by that of any other industry. Memphis was chosen as the site of the plant because of its position as the center of a large and growing market, the advantages of rail and water transportation.

Rated capacity of the new ammonia/urea plant is 250 tons of ammonia per day, of which 100 tons can be converted into 150 tons of urea per day; it is expected to reach or exceed rated capacity early in 1955.

John G. Carriere, Plant Manager, gives signal for filling first tank car of anhydrous ammonia produced at new $20,000,000 Grace Chemical Company petrochemicals plant in Memphis. Ready to accept the first shipment of ammonia for Swift & Co. is C. U. Ellis (left) of Chicago, Superintendent of Swift's Plant Food Division.

### General Process Description

### Ammonia—Urea Plant

The Grace Chemical Company plant was designed and built by Foster Wheeler Corporation to manufacture 250 tons per day of anhydrous ammonia and 150 tons per day urea.

Three licensed processes are employed: the Texaco partial oxidation process for the production of ammonia synthesis gas, The Casale process for ammonia synthesis, and the Pechiney process for the production of urea. These processes require just three raw materials for the production of ammonia and urea: natural gas received by pipeline, and air and water drawn from immediate surroundings. A brief process description follows:

Air is compressed to about 600 pounds per square inch, scrubbed with caustic solution to remove carbon dioxide, and dried. It is then sent to an air separation plant, where it is cooled until it liquifies, and separated by distillation into its two principal components, nitrogen and oxygen.

The oxqgen is mixed with compresed natural gas in the Texaco units where the natural gas (consisting mainly of methane) is partially burned to form a synthesis gas composed of hydrogen and carbon monoxide. The temperature and pressure in these units are in excess of 2000 degrees Fahrenheit and 300 pounds per square inch.

The synthesis gas is quenched with water to reduce its temperature and is then mixed with steam in vessels called shift converters. In these units, which contain a catalyst, carbon monoxide is "shifted" to carbon dioxide.

The carbon dioxide is removed from the synthesis gas stream by absorption in monoethanolamine (MEA), and is later recovered from the MEA solution in a separate stripper column. This carbon dioxide is used as a raw material in the production of urea.

The synthesis gas stream, now essentially hydrogen, is further purified by scrubbing with caustic, drying, and finally by washing with liquid nitrogen supplied by the air plant. These steps remove the last traces of impurities such as carbon dioxide, water, methane, argon, and carbon monoxide. Some nitrogen remains in the hydrogen stream after the nitrogen wash, but not enough to produce a proper ratio for ammonia production. Therefore, additional nitrogen from the air plant is added to achieve a hydrogen-nitrogen ratio of 3 to 1, and the resultant synthesis gas is compressed to 8,000-12,000 pounds per square inch. At this pressure the hydrogen and nitrogen are reacted over a catalyst in the Casale units to form ammonia.

The Casale Ammonia system is unique in that unreacted gases are recirculated by an ejector rather than by a compressor. Futher, the high pressure employed allows condensation of the just-synthesized anhydrous ammonia at normal cooling water temperatures rather than requiring the use of refrigeration.

After synthesis and condensation,

the ammonia is either stored directly as anhydrous or is absorbed in water and stored as an aqueous solution.

The urea plant uses carbon dioxide and ammonia as raw materials. Carbon dioxide is obtained from the monoethanolamine stripper mentioned previously, and is then compressed, preheated, and purified to remove traces of sulfur and oxygen. The ammonia and carbon dioxide are sent to the urea autoclave where, in an oil medium and under about 3,000 pounds per square inch pressure, they are reacted to form urea and water.

The presence of oil in the autoclave forms the basis of the Pechiney urea process. Use of the oil has three advantages. First, it coats the walls of the autoclave and reduces corrosion. Second, it provides a means for controlling the temperature of the reaction. Third, and most impartant, it provides a means of recycling any carbon dioxode and ammonia which do not react during their first pass through the synthesis system.

The material from the reaction autoclave is sent to a stripper tower where the unreacted raw materials (carbon dioxide and ammonia) are removed at the top of the tower. The unreacted ammonia and carbon dioxide are recombined in an oil slurry in a reactor and recycled to the autoclave. The bottoms from the stripper are separated into two layers in the decanter. One of these layers consists of urea dissolved in water, and the other is oil.

The water solution of urea obtained from the decanter is further processed to recover solid urea by one of two paths. One process path produces a prilled grade of urea, which is used as a fertilizer or as a cattle feed supplement. The other process path produces crystalline urea, which is suitable for applications requiring a purer grade material, as for example, in the manufacture of plastics.

In order to produce fertilizer grade urea, the solution from the decanter is vacuum-evaporated to a concentrated state, then sprayed into air at the top of a tall tower where it is cooled and solidified into little pellets or "prills" about the size of large grains of sands as it falls to the bottom. The prills are further cooled, dusted with a small percentage of clay (principally to prevent sticking), and conveyed to bagging and storage.

Crystalline urea is produced by purifying the water solution obtained from the decanter, removing the last traces of unreacted raw materials, filtering, and crystallizing in a large vacuum crystallizer. The crystals are recovered by a centrifuge, dried in a rotary kiln, then conveyed to bagging and storage.

### Memphis Staff

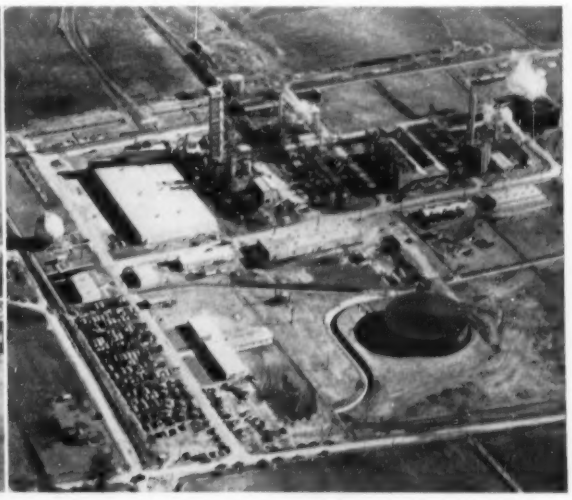
The Memphis plant staff is as follows:

Plant manager, John G. Carriere; plant superintendent, Charles Dougherty.

**Department Heads:** Ammonia Department, Julian A. Rogers; Urea Department, William W. Smiley; Engineering Department, Loren C. Skinner; Controller Department, Louis S. Taylor; Industrial Relations Department, Peter D. Chabris; Laboratory Department, M. Thomas Giachino; Purchasing Department, Raymond J. Geear; Technological Department, Max F. Mueller.

**Sales Department Stationed at Memphis:** District sales manager, C. James Bown; manager of agricultural service, Robert Q. Parks; project manager, Phil Feder.

Left: View of Grace Chemical Company's new nitrogen plant which began production of ammonia, Dec. 21 and which was formally dedicated Jan. 6. This plant will produce ammonia and urea for both agricultural and industrial uses; the ammonia will be marketed primarily in the Mid-South and lower corn belt areas, while the urea will be sold nationwide and exported. Towers in the foreground, from left to right, are the synthesis gas caustic scrubber, and $CO_2$ absorber, and the MEA reactivorators. Right: Aerial view of the new plant located at Woodstock, near Memphis. Official opening of the plant Jan. 6 assembled a large group and included Grace Chemical officials and special guests. Speakers honoring the occasion were Sen. Estes Kefauver, Asst. Secy. of Commerce, Samuel W. Anderson, Grace Chemical's board chairman Charles E. Wilson, Memphis' Mayor Frank Tobey, Representative Clifford Davis. In addition to dedication ceremonies, guests attended a luncheon at the Hotel Peabody and a reception and dinner at the Memphis Country Club.



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## ARKANSAS

**Tri-State Chemical's** plant at Springdale was formally opened with a special program of ceremonies on January 26. Plant officials and executives from the firm's main office at Webb City, Mo. teamed up with the Springdale Chamber of Commerce for the festivities.

## CALIFORNIA

Construction was recently completed on a $25,000 converter for changing anhydrous ammonia to aqua ammonia at the **John Taylor Fertilizer** plant in Sacramento. The converter can produce 27,000 gallons of aqua ammonia in five hours.

In addition to the converter, the firm has added a 30,000-gallon storage tank to supplement six existing 25,000-gallon tanks. **John Taylor** is owner of the firm, **Rudy Schachtili** is manager and **William Baker** is superintendent.

* * *

**Wilson & Geo. Meyer Co.** recently played host to 60 guests at a smorgasbord dinner aboard the motorship Buffalo in Port Hueneme harbor to celebrate the first ocean delivery of chemical fertilizer to the country. President **Wilson Meyer** and Vice Presidents **Jeffrey W. Meyer** and **Thomas W. Harris** were on hand to greet the guests before the ship unloaded a cargo of 850 tons of calcium nitrate and 300 tons of urea.

## COLORADO

Commercial availability of high analysis diammonium phosphate fertilizer to be marketed under the trade name of "DAP," has been announced by **K. B. Stuart,** general sales manager of the chemical, coke and coal divisions of **The Colorado Fuel and Iron Corporation.**

The new fertilizer, which has a 21-53-0 analysis, has been made possible by recent technological development at Colorado Fuel and Iron's coke oven plant at Pueblo.

For many years, the company has produced ammonium sulfate as a by-product of the coke production for the steel mill operation at Pueblo. Now, instead of removing the ammonia from the coke oven gases with sulfuric acid—which is the conventional method—CF&I is doing the removal or "scrubbing" with electric furnace phosphoric acid. As a result, the end product now is diammonium phosphate.

Practicability of the new method was shown with a full scale plant production test during the summer of 1954. Immediately following this successful test, the company made plans for permanent changes in facilities to permit large scale production of this material.

Since "DAP" is water soluble, it can be used in irrigation water, in conventional liquid application equipment or sprinkler irrigation systems. In its dry form, "DAP" is claimed to be free flowing, lending itself to broadcasting, plowing down, or other sanctioned methods of fertilizer application. Fully compatible, it can also be mixed readily with other fertilizer materials.

Because of the geographical location of the CF&I plant, marketing plans are being made to include the entire western half of the United States.

In making this major production change at their Pueblo mill, CF&I believes it is the first major coke oven operator to make such a move. Although it has been known for many years that "DAP" would be technically possible in such a plant, the unavailability of the proper grade of phosphoric acid has usually eliminated such consideration.

Technical collaboration from scientists and engineers of **Monsanto Chemical Company,** and **Koppers Company, Inc.,** aided in bringing about successful production of this new product, Mr. Stuart added.

## FLORIDA

**Armour Fertilizer Works** expects to have its new phosphate rock plant at Bartow in operation before summer's end.

* * *

**Wilson & Toomer Fertilizer Co.** figured in two recent news items. Thieves entered their Fort Pierce plant office and broke into a wall safe, making off with a small amount of money. Shortly before, an explosion and resulting fire had done considerable damage to their insecticide plant at Pompano Beach; sulphur dust particles are believed to have become ignited in an elevator. The blaze was quickly brought under control, but smouldering continued for some time afterward.

* * *

Representatives of 16 industry firms in central Florida have formed the **Inland Fertilizer Council** to disseminate knowledge of fertilizers to the benefit of growers in the area and to seek equalization of the freight rate structure.

**Robert M. Howard** of **Howard Fertilizer Co.,** Orlando, was chosen president of the group at the initial meeting. Other officers elected were Vice President **Norwood A. Lockett** of **Foremost Fertilizer Co.,** Leesburg, and Secretary-Treasurer **Paul A. Simmons, Growers Fertilizer Cooperative,** Lake Alfred.

Executive council members in addition to the officers, are: **Luke B. Angel, Polk County Fertilizer Works,** Haines City; **Lee F. Brannen, Marico,**

**Inc.,** Ocala; **Aubrey Myers, Wheeler Fertilizer Co.,** Oviedo; and **N. T. Taylor, Wedgeworth's, Inc.,** Belle Glade.

Others attending the organizational meeting at Orlando were: **A. C. Mathias, Haines City Fertilizer Works,** Haines City; **George M. Barley, Diamond R Fertilizer Co.,** Winter Garden; **E. C. Mitchell, Citrus Culture Crop.,** Mount Dora; **J. J. Gum, Ridge Fertilizer Works,** Lake Wales; **D. L. Harper, Chase & Co.,** Sanford; **Morton Howell, Waverly Fertilizer Works,** Waverly; **E. R. Johnston, Minute Maid Grove Corp.,** Frostproof; and **V. B. Plummer, Glades Chemical Co.,** Pahokee.

* * *

The **University of Florida Agricultural Experiment Station** will furnish research consultation and assistance to the **Costa Rica Ministry of Agriculture** for the next three years, according to an announcement by **Dr. J. Wayne Reitz,** provost for agriculture. A total of 13 staff members will be assigned for short terms in the Central American republic to assist in improving research techniques in plant pathology, horticulture, agronomy, soils and related subjects.

## ILLINOIS

**Illinois Utilities Co.,** an associate of **Illinois Electric and Gas Co.,** has leased property in Mt. Carbon for a fertilizer plant. A 30,000-gallon storage tank has been erected at the site. Initially, the plans call for distribution of anhydrous ammonia, with expansion later to include a mixing unit for complete plant foods.

## IOWA

Twenty-six bulk fertilizer dealers were luncheon guests last month at the new **Spencer Plant Foods, Inc.** plant at Spencer. After a morning tour of the manufacturing area, they were feted by **Fred Sherer,** president of the firm, **Bob Cloud,** plant manager, and **Frank Powers,** sales manager.

* * *

**American Nitrogen Corp.** of Huntington, W. Va., is building a new plant at Dakota City to distribute liquid nitrogen forms and to produce a complete liquid fertilizer. **Harold Miller** of Tekamah, Nebr. will manage the new facility.

* * *

In a recent one-day drive 30 workers from Shelby and adjacent counties sold over 3,000 $10 shares of preferred stock in **Shelby County Farm Supply Co.,** a **Farm Bureau** affiliate, to finance a new bulk fertilizer program.

* * *

Approximately 100 members from all sections of the state were on hand for the first annual meeting of **Iowa Agricultural Ammonia Distributors Association** at Des Moines January 13. They discussed plans for the association, problems dealing with fertilizers, and an advertising program for increasing anhydrous sales. **B. A. Frankl** of **Mor-Gro, Inc.,** Algona, is president and **James H. Andrew** of **Andrew Farm Stores,** Jefferson is secretary-treasurer.

* * *

**Swift & Company's** Mason City plant, just completing its first year of operation, has already expanded its carloading facilities. **W. E. Smith** manages the plant.

* * *

**Geigy Agricultural Chemicals'** half-million dollar pesticides plant at Des Moines is nearing completion. Sixty to seventy persons will be employed at the 35,000 square foot building, erected with tilt-up concrete construction by **Weitz Co., Inc.**

* * *

**Super-Crop Plant Foods, Inc.** (plans for which were reported here in September) at Ottumwa has completed test runs of its 15-to-20 tons per hour plant, set up in a former roundhouse of Milwaukee railroad. The continuous-process operation is owned by **Dave and Don Carpenter** of Ottumwa and their father, **J. L. Carpenter** of Grinnell.

* * *

**Hi-Yield Fertilizer Service** is a new anhydrous ammonia bulk distributor at Northwood. **Lloyd Peck** of Mason City is manager of the establishment, which is putting up a 30,000-gallon storage tank.

* * *

**Matt Sylvan** of Kansas City is manager of the anhydrous ammonia facility operated by **Jack Hodgson** and **Cyril Jirovsky** at Onawa.

* * *

**Phillips Petroleum** has acquired a site just east of Webster City, where they will develop a bulk plant and propane plant at present. Future plans call for establishment of a liquid fertilizer set-up at this location.

* * *

**J. A. Risvold** of Clear Lake has erected a 30,000-gallon ammonia tank near the **Farmers Co-op Elevator** at Thornton, and will offer custom application service.

## KANSAS

A $7,500 fire struck the **Kansas Agricultural Chemical Co.** plant at Junction City December 31. No fertilizer materials were reached by the flames, which started in a tool shop where **E. J. Mathson,** superintendent, and another employee were working. Despite efforts to extinguish it, the fire reached a gasoline drum and spread rapidly to the main building. A large section of the plant's metal roof was damaged.

## MARYLAND

**Wm. B. Tilghman Company's** new Pocomoke City plant held open house January 28. Features were a plant tour and barbecued chicken along with mementoes and door prizes.

* * *

**Fertilizer Manufacturing Cooperative, Inc., Baltimore,** has cleared a large part of its plant and installed equipment for production of granular fertilizer. They will continue to produce regular mixed goods, also, but in reduced volume, according to **Albert Spillman,** general manager.

## MINNESOTA

**Lloyd L. Nolte** will be in charge of **Minnesota Liquid Fertilizer Com-**

pany's new anhydrous bulk plant and applicator service at Litchfield.

## MISSISSIPPI

**Modern Fuel and Ammonia Service, Inc.** is a new Natchez firm, listing capital stock of $20,000.

* * *

**Olin Mathieson Chemical Corp.** is opening a large distributing center at Greenville in the facilities of **Kinchen O'Keefe & Co.** to serve the Mississippi-Arkansas-Louisiana area along with parts of Tennessee and Alabama. The new center will be supplied by barge.

* * *

**Standard Ore and Alloy Corp.,** New York, has announced plans for a $20 million plant employing 300 persons at Natchez. The new operation will manufacture acetylene, vinyl derivaties and ammonia, with production of the latter planned at 60,000 tons annually.

## MISSOURI

**Consumers Oil Co.** of Braymer is building a mixing plant alongside the Milwaukee Railroad in that city. The building will be 30 by 60 feet.

* * *

The Joplin plant of **Missouri Farmers Association** (see October CF) produced its first tank of phosphoric acid last month. Loaded into a special trailer tank, it was trucked to the Springfield plant for triple super phosphate production.

* * *

**Missouri Farmers Association** recently announced plans for construction of 12 bulk fertilizer plants throughout the state during 1955. The units, of identical design, are planned to cost approximately $35,000 each for building and fixed assets, and to require another $35,000 each for inventory and working capital.

Certificates are being sold to individual farmers in the immediate area of each proposed plant site to raise the $35,000 for plant and fixed assets. It is expected that each plant can serve effectively a radius of 30 miles from its location, offering spreader service to those farmers who want it.

Present plans call for the use of a base fertilizer such as 18-18-0 together with triple superphosphate and potash to custom mix the required analyses. Plans are to use granular material, but in some cases pulverized goods may have to be used. Base goods would be supplied by MFA's plants at Springfield, Joplin and Maryland Heights.

Sites where plants are under way or expected to be built include Albany, Butler, Centralia, El Dorado Springs, Gallatin, Lockwood, Rolla and Slater.

## NEBRASKA

**Farmers Elevator Company** at Harvard is installing an anhydrous ammonia bulk plant with a capacity of 30,000 gallons.

Bill Barty, a midget in the Spike Jones T-V show, is an elf symbolizing nitrogen in a movie, "George Tackles the Land," which has just been released by Spencer Chemical Co. A 27-minute color film, the theme is fertilizer usage. Spencer expects the film to be of use in dealer events, extension work and club meetings, and will distribute prints from its Kansas City office. A number of black-and-white copies have also been prepared for television use. Above, the portrayer of "Mr. N" tries a bag on for size while Dave Van Aken, left, Spencer Kansas representative, and Claude Byrd, manager of agricultural chemical sales, look on.

**John White Fertlizer Co.** of Auburn is completing a new liquid mixing plant which will have a daily capacity of slightly more than 100 tons. **John White** is owner of the firm.

* * *

**Cass County Farm Bureau** expects to have its ammonia bulk plant in operation at Weeping Water around March 1.

## NEW MEXICO

An addition and revision of the **International Minerals & Chemical Corp.** potash plant at Carlsbad to cost "in excess of one million dollars" has been announced by **A. Norman Into,** vice president. **Stearns-Rogers Manufacturing Co.** has already started the work which will increase the plant's potassium sulphate output by 40,000 tons a year.

## NORTH CAROLINA

A cracked insulator allowed water to short wires and throw power circuits out of order at **New Bern Oil & Fertilizer Company's** plant recently. Power line crews located the difficulty quickly and restored power to the factory and surrounding areas of the city.

* * *

**Irrigation & Chemical Supply, Inc.** is a newly-chartered fertilizer dealer at Wallace. Authorized capital stock is $100,000, subscribed stock $400. Incorporators are **Joseph E. Wood** and **Henry R. Carter** of Wallace, **G. B. D. Parker, Jr.,** and **Norman Jones** of Chinquapin.

## OREGON

**Ammonia Mariner, Tidewater-Shaver Barge Line's** new seagoing barge for bulk transportation of anhydrous ammonia, brought its first load into its home port of Portland last month. The 252-foot vessel, especially constructed by **Bethlehem Steel Company's** Beaumont (Texas) yard and certified for unlimited ocean service by **U. S. Coast Guard** and **American Bureau of Shipping,** will shuttle between **Shell Chemical Corporation's** anhydrous producing plant at Pittsburg, Calif., and

the new Shell bulk terminal at Portland. The new terminal can store 2300 tons, nearly twice the 1600-ton capacity of the **Ammonia Mariner.** Her maiden voyage was not a capacity load, however, for she brought along three extra tanks on deck to be installed on a river barge for transportation of ammonia up the Columbia River to Shell's two new storage spheres at Pasco, Wash.

## TENNESSEE

**Tennessee Liquid Fertilizer Co.,** Dyersburg, is a new incorporation listing 800 shares of stock at $50 each.

* * *

**Soil Builders International Corp.,** has gotten production under way at its enlarged Clarksville plant, which will turn out plant food and soil conditioner. **S. Spencer Green,** president, says the expansion has increased capacity of the plant fourfold. The 16,000-square foot facility, located on a three-acre tract, will produce "Clorion," described as a new plant nutrition and soil building compound.

* * *

**Knoxville Fertilizer Co.** recently purchased twelve acres at Johnson City, where it is reported they plan to erect a new plant. The site selected is part of the former **Cranberry Furnace** operations.

* * *

**Tennessee Products & Chemical Corp.** will be merged with **Merritt-Chapman & Scott Corp.** of New York under a recently-revealed proposal. The trans-action, involving some $10 million, provides for combining Merritt-Chapman, Tennessee Products and **Devoe & Raynolds** of Louisville through an exchange of stock. **Louis E. Wolfson,** Miami industrialist, already holds substantial interest in all three companies. Plans are for the Tennessee company, which operates six plants in the state, to retain both its identity and its present management. **Carl McFarlin, Sr.,** Tennessee's president, indicated that plans for expansion of the firm's operations are in the making.

## TEXAS

**Tyler Fertilizer Company's** new plant at Swan is expected to have three times the capacity of their present plant at Tyler.

* * *

**Dow Chemical Company** has established an agricultural research center near Freeport. **Dr. R. W. Colby,** Dow's director of agricultural research, says the center's three-phase program will revolve around studies of plant growth, pesticides development, and animal nutrition. At present, selective herbicides and defoliants hold the research spotlight there.

## UTAH

**Bonneville, Ltd.,** potash firm located near the Nevada state line at Wendover, will spend $300,000 during the next two years for new storage facilities. The firm plans to spend $150,000 a year on construction of units for storing 20,000 to 30,000 tons of potash.

Included in the expansion program will be covered structures to accommodate from 50 to 60 railroad box cars and the moving of the dryer, sampler and certain other facilities to new locations. It also was announced that **Western Pacific Railroad Co.** is building a spur into the company's production area.

## VIRGINIA

After a clumsy and unsuccessful attempt to crack the safe at **Bone Dry Fertilizer Co.** in Richmond early last month, polite thieves left a neatly-penned note bearing this message, "You win. Thanks." The "thanks" was apparently for two clocks, 24 pocket knives, five cigarette lighters, and other items missing from the office after the burglary.

## WASHINGTON

**Central Fertilizers, Inc.,** has been incorporated at Moses Lake with capital of $30,000. Incorporators are **Marshall Burress, J. O. English** and **Arthur H. Smith,** all of Moses Lake.

* * *

After a year's trial with liquid fertilizer blending, **Washington Cooperative Farmers Assn.** is expanding its facilities at Lynden and planning two more plants in the state. **Garrett Van Dyk** is general foreman of the operation at Lynden.

* * *

**Al Brantingham,** operator of an **Agriform** plant at Lind, has leased land in Ritzville and announced plans for setting up a similar service there during the spring.

## AUSTRIA

Austrian production of nitrogenous fertilizers in 1954 is estimated to have reached 543,000 tons, exceeding the 1953 output by more than 10%. Manufacturers reportedly have sold their advance production up to the middle of 1955.

## CANADA

Another step in the expansion of the agricultural chemical industry in Western Canada has been taken with the acquisition of **Chemical Products Limited,** of Regina, by **Niagara Brand Spray Company, Limited,** Burlington, Ont.

Announcement of new ownership was made by **G. E. Willan,** vice president and general manager of the Burlington company, who stated that the Regina plant and warehouse will serve as a base of operations for expansion by his company in Western Canada.

Chemical Products has been supplying agricultural chemicals such as seed dressings and weed killers to Western farmers for the last twenty years. Niagara, as manufacturers and formulators of an extensive line of fungicides, insecticides and herbicides, is one of the pioneer companies in the agricultural chemical field, having been established in 1909. Growth of the company's business in the prairie provinces dictated plans for plant and warehouse expansion.

## GERMANY

The West German potash industry, which last year exported 43 per cent of its output or 690,000 tons in terms of $K_2O$, hopes to increase its exports

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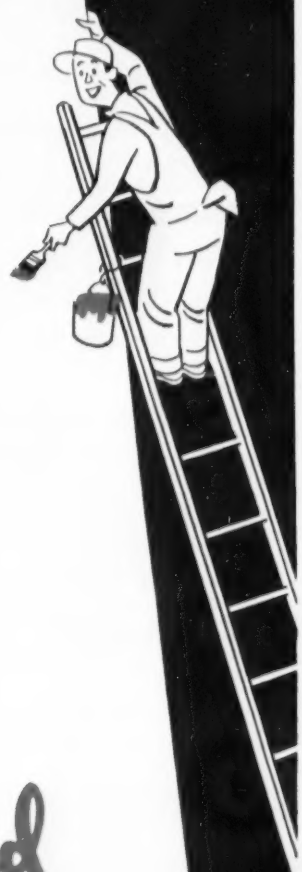

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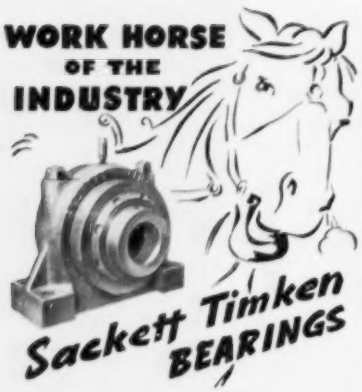


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to 50 per cent of total production in the near future.

According to industry quarters, total sales last year amounted to 1,600,000 tons, 14 per cent more than in 1953. Exports were 21 per cent higher than in the previous year, sales 9 per cent higher.

Extensive deliveries were affected to almost all West European countries. In addition, shipments to the Far East, especially Japan, gained importance last year. Rising exports to South Africa, Rhodesia, the Gold Coast and Egypt also revealed a growing need for fertilizers in Africa.

The country's 13 mines had to work to capacity to meet demand, and it is reported that the four main companies will soon have to consider plans for expanding production.

## INDIA

India contemplates the establishment of at least four more fertilizer factories at an estimated cost of $168 million within the next seven years.

The Indian Government has set up **Fertilizer Production Committee,** an advisory body, to consider and make recommendations on capacity expansion for the production of nitrogenous fertilizers. The committee will study suitable sites for the establishment of fertilizer plants, the quantities of fertilizer that could be economically produced at each location, the processes to be adopted, and the probable cost of production.

* * *

A $20 million project which will produce 250,000 annual tons of fertilizer is part of India's immediate atomic energy program. Plant units will be built in northwest India, near the Bhakra-Nangal project, and will take three years to complete.

## KOREA

A plant capable of turning out 15,000 annual tons of plant food from human waste and trash will be built in Seoul according to a recent announcement by Mayor **Kim Tai Sun.**

## SWEDEN

**Svenska Salpeterverken,** a joint venture of **Sweedish Cooperative Union** and **Sweedish Farmers Associations,** will build a fertilizer plant near Stockholm at a cost to exceed $5 million. The facility is expected to be ready for production by mid-1956.

## TURKEY

Among new factories slated for location in the Adana area of southern Turkey is a fertilizer plant with output great enough to allow for considerable exports to Arab countries.

## VENEZUELA

The Venezuelan government announced January 17 that it had signed an agreement with Italy's **Montecatini Chemical Co.** to build a fertilizer factory in Venezuela. The plant is scheduled to produce 30,000 annual tons of synthetic nitrates for the nation's agriculture and industry. Montecatini, in addition to making available its own patents, is to supply technical assistance until the factory is in operation and local labor trained. Machinery is to be supplied by other Italian firms. Similar negotiations were recently reported between Montecatini and the Columbian government for erection of a factory at Barranca Bermeja.

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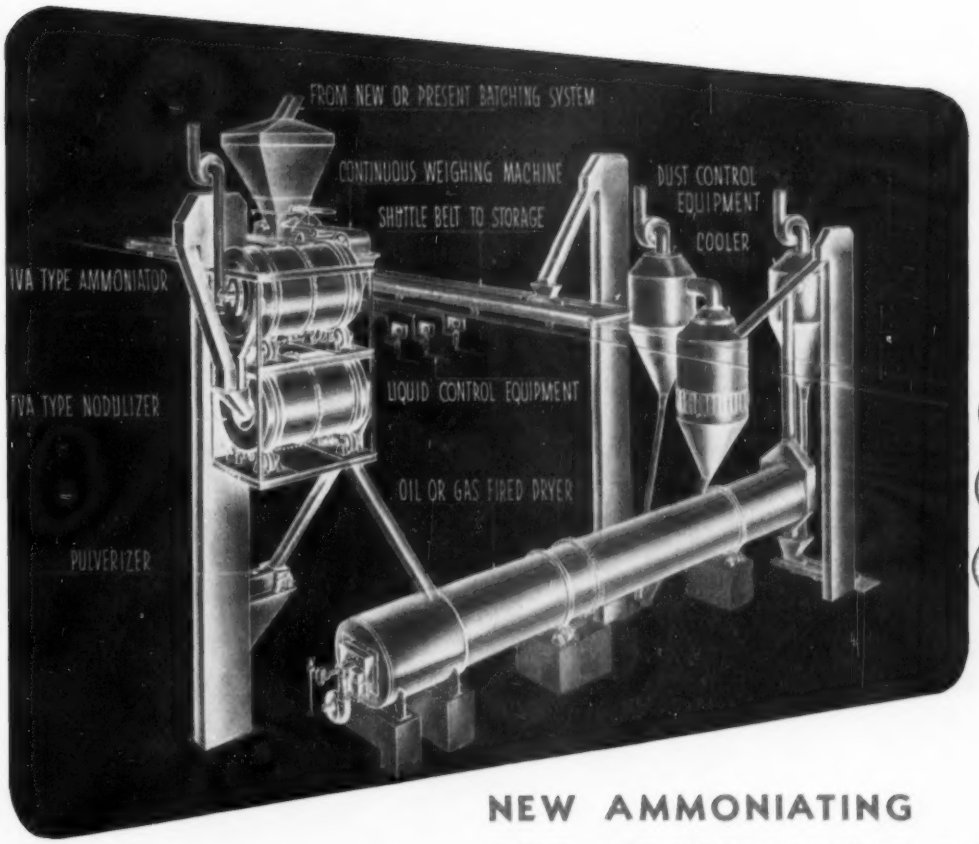
## Phelps Dodge Opens Chicago Warehouse

Phelps Dodge Refining Corporation, New York, has opened a warehouse in Chicago where stocks of all grades of Triangle Brand Copper Sulphate and Nickel Sulphate will be available for truck pickup. This will be Phelp Dodge's third shipping point, the other two being El Paso, Texas, and Laurel Hill, Long Island.

The address of the new warehouse is 5310 West Sixty-Sixth Street, Chicago 38, Ill. The Chicago sales office of the company has been moved from 230 North Michigan Boulevard to the new warehouse.




## NEW AMMONIATING AND GRANULATING PROCESS

This new TVA Sackett-Built continuous process produces high-analysis granular mixed fertilizers from lower cost raw materials. The finished product need be stored only 48 hours before packaging. Eliminates "caking" in the bag. This process is presently being offered in 10, 15 and 20 tons per hour capacities. Can be incorporated into new or existing buildings. We also do the required engineering, installation and supervision of initial production if owner desires.

*Superphosphate and mixed goods producers are invited to get our seasoned counsel on their expansion and modernization programs. It is available at no cost.*

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# Among the Regional Associations-

**At the Texas PFES Meeting:** 1. Dr. Russell Coleman, NFA president, is presented with a travelling gift by Dr. J. E. Adams, Texas A&M College. 2. C. D. Shallenberger, Shreveport Fertilizer Works, Shreveport; R. C. Davis, superintendent of the Beaumont AES; Dean C. H. Shepardson, School of Agriculture, Texas A&M. 3. B. B. Crozier, H. R. Miller and R. H. Fuqua, all with Armour Fertilizer Works. 4. G. G. Gibson, Texas A&M director of Extension, receives gift from Dr. J. E. Adams, Texas A&M. 5. Lee Alberts, Southwest Potash Corp., and Jack Lindsey, International Minerals & Chemical Corp., Shreveport. 6. P. F. Schowengerdt, Olin Mathieson Chemical Corp.; Dr. Russell Coleman, NFA; Joe Mullen, Olin Mathieson Chemical Corp.; Dr. J. Fielding Reed, American Potash Institute, Atlanta. 7. H. W. Dude, Southwest Chemical Co., Inc., and Dr. J. F. Fudge, State Chemist, Texas AES. 8. B. L. Henderson of Campbell Fertilizer Co., Houston, new president of Texas Plant Food Educational Society. 9. Sherman Clark, Texas Gulf Sulphur Co., with Walter Young and Dean Smith, Hi-Yield Fertilizer Co. 10. James Dawson, Jr., Fidelity Chemical Corp., Houston. 11. Harold Trammell, Farmers Fertilizer Co., Texarkana, and J. T. Carlisle, Jacksonville Fertilizer Co., Jacksonville. 12. Beal Hargrove, Lion Oil Co. 13. Harold Hamby, Chilean Nitrate Sales Corp.; Albert Kinnard, Allied Chemical & Dye Corp.; Jud Drewry, International Minerals & Chemical Corp.; Herbert J. Ploch, Lion Oil Co. 14. Dr. J. Fielding Reed and Dr. N. D. Morgan, both with American Potash Institute. 15. Dean Smith, Hi-Yield Fertilizer Co.; W. Q. Burns, International Minerals & Chemical Corp.; and Dr. Willard H. Garman, APFC agronomist. 16. H. C. Colvin, Ashcraft-Wilkinson Co., and J. C. O'Neal, Lion Oil Co. 17. R. G. Jarred, Red Star Fertilizer Co., and Dr. W. H. Garman, APFC. 18. John Frahm, Arkell & Smiths, and B. L. Henderson, Campbell Fertilizer Co. 19. C. D. Shallenberger, Shreveport Fertilizer Works, Shreveport, and Dr. J. E. Adams, Texas A&M. 20. G. C. Scott, Lion Oil Co., and Tom Wright, Texas Farm Products Co., Nacogdoches.

# NEW TEXAS PFES OFFICERS ANNOUNCE 3-POINT PROGRAM

The Texas Plant Food Educational Society elected its officers for the coming year during the Texas Fertilizer Conference, held in the Texas A & M Memorial Student Center at College Station January 6-7.

B. L. Henderson of Campbell Fertilizer Co. in Houston became the new president of the society, and Dr. N. D. Morgan of American Potash Institute, Shreveport, La., was elected vice president; Sherman W. Clark, Texas Gulf Sulphur Co., Houston, is the new secretary-treasurer.

The 1955 directors are as follows—North Texas: Dean Smith, Hi-Yield Fertilizer Co., Bonham, and Harold Trammell, Farmers Fertilizer Co., Texarkana; South Texas: B. L. Henderson, Campbell Fertilizer Co., Houston, and James Dawson, Jr., Fidelity Chemical Corp., Houston; East Texas: J. T. Carlisle, Jacksonville Fertilizer Co., Jacksonville, and Tom Wright, Texas Farm Products Co., Nacogdoches; West Texas: Floyd Prather, Central Texas Fertilizer Co., Comanche, and A. L. Bennett, Amarillo; Bordering States; Dr. M. D. Morgan, American Potash Institute, Shreveport, and Stanley C. Hackett, Dixie Fertilizer Co., Shreveport.

The officers and directors announced a 3-point program for the coming year:

1. All active members of the Society enlist as soon as possible affiliate members, primarily fertilizer dealers, to the organization for the purpose of forming a training program to assist the dealers in making definite and positive fertilizer recommendations for the various soils and crops, these recommendations being those developed by the Texas Agricultural Experiment Station and published by the Extension Service.

2. Each of the five districts to hold at least one general assembly as soon as possible in each district for the purpose of bringing the objectives in Item No. 1. The directors of each district are responsible for developing the educational meetings.

3. The Directors are to make an effort to publish a simple, inexpensive poster relative to fertilizer recommendations for distribution among the affiliated fertilizer dealers.

In his opening remarks at the initial session on January 6, Dr. R. D. Lewis pointed out that in 1930 40% of Texas' population lived on farms, and the average farm consisted of 252 acres. In 1954, he stated, only 14% of the total Texas population lived on farms, and the average size of each farm had grown to 517 acres. Dr. Lewis predicted that the trend toward larger farms with an increase in mechanization would increase in the state. Water, he added, is the basic agricultural resource in Texas.

The conference session on Thursday morning heard reports on the "Fertilizer Outlook for 1955" from various industry representatives led by C. D. Shallenberger, Shreveport Fertilizer Works, Shreveport, La., followed by a talk on "Trends in the Use of Mixed Fertilizers" by NFA President Russell Coleman.

The afternoon featured four talks on fertilization methods, response and interpretation. A. C. Caldwell led off with "Methods Used in Determining Responses to Fertilization," and R. J. Hildreth followed with "Economic Interpretation of Responses to Fertilization."

Next came "Fertilization of Turfs" by M. H. Ferguson and E. C. Holt, and R. L. Cheaney's "Response of Pasture Forage at Beaumont to Phosphate Fertilization" concluded the day's program.

The annual banquet was held that evening in the Student Center Ball Room. Following the banquet, a special showing of NFA's new film "The Big Test" was presented for the group.

Friday morning's assembly dug into some of the technical phases of plant nutrition, beginning with "Soil Physical Factors Involved in Nutrient Uptake" by E. R. Lemon, and followed by G. W. Kunze's "Potassium Potentials in Texas Soils." F. L. Fisher and E. C. Holt teamed up to report on "Iron Chlorosis on the Rio Grande Plain," then M. K. Thornton concluded the program with a discussion of "Fertilizer Recommendations and Soil Testing."

Before the meeting adjourned, plans were announced for next year's Texas Fertilizer Conference, which will also be held at the Memorial Student Center in College Station on January 5 and 6, 1956.

## Trace Elements Halt Cracking In Tomatoes

Use of 'FTE' resulted in less cracking in tomatoes and a more normal varietal shape according to a report of the Jackson B. Hester Agricultural Laboratories.

In two random samples of tomatoes picked by a grower, Mr. Hester found that the sample from the untreated area contained 63 per cent medium to severely cracked tomatoes. The one from the 'FTE'-treated area held 23 per cent moderately cracked tomatoes with no severely cracked ones, the consultant said.

Containing the trace elements iron, manganese, copper, zinc, boron and molybdenum, 'FTE' is a slowly-soluble glass frit made by the Ferro Corp., Cleveland.

## New Transportometer Scale Line Representative

Dwight-Lloyd, Inc., division of Sintering Machinery Corporation, Netcong, N. J., announces the appointment of the following sales representative to handle their complete line of Transportometer continuous weighing and feed regulating scales in northern Alabama: General Machinery Company, 1600 Second Avenue South, Birmingham, Alabama.

# Weather Resistant

Hammond Multi-Walls assure complete protection of your products in any kind of weather. Being water resistant, they keep out snow, rain or sleet . . . keep contents dry and safe until bags are opened, and your products used. Why not call in the Hammond man near you. His main interest is in recommending the *right* Multi-Walls for the exact requirements of your products. Prompt deliveries are assured.

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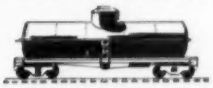
# PHILLIPS OFFERS

# 5 FERTILIZER MATERIALS FOR HIGH ANALYSIS MIXTURES

## 1 AMMONIUM SULFATE

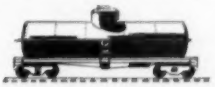
New Premium Quality Phillips *66* Ammonium Sulfate contains 21% nitrogen, 23.8% sulfur. It is *dry*-cured to remove excess moisture—prevent caking. Uniform, dust-free crystals flow freely—mix easily. Ideal for all analyses of mixed goods and for direct application. Available in bags or bulk.

## 2 ANHYDROUS AMMONIA



Phillips *66* Agricultural Ammonia contains 82% nitrogen. It's a convenient, economical source of nitrogen for formulation. Tank car shipments are assured to Phillips contract customers by Phillips huge production facilities in the Texas Panhandle and at Adams Terminal near Houston, Texas.

## 3 NITROGEN SOLUTIONS



Get more N per dollar! There are three Phillips *66* Nitrogen Solutions for use in preparation of high-analysis fertilizers and the ammoniation of superphosphate. These solutions keep handling costs low, help rapid, thorough curing.

## 4 AMMONIUM NITRATE

Phillips *66* Prilled Ammonium Nitrate contains 33% nitrogen. The small, coated prills or pellets resist caking . . . handle easily. Depend on Phillips *66* Prilled Ammonium Nitrate for uniform, free-flowing properties in formulations and top-notch crop response as a direct application material.

## 5 TRIPLE SUPERPHOSPHATE

Phillips *66* Triple Superphosphate contains 46% available phosphoric acid. Ideal for use in formulation of high analysis fertilizers.

Phillips 66

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PASADENA, CALIF.—*604 Citizens Bank Bldg.*
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SALT LAKE CITY, UTAH—*68 South Main*
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WICHITA, KAN.—*501 KFH Building*

# GEORGIA PFES ELECTS HARLEY

W. W. Harley of Southern Fertilizer & Chemical Co. in Savannah became president of the Georgia Plant Food Educational Society at that group's third annual meeting in Athens on January 18. An organizer and twice a vice president of the society, he succeeds W. A. Higginbotham of Armour Fertilizer Works, Albany, as head of the industry organization. Dr. J. Fielding Reed, American Potash Institute, Atlanta, remains in office as secretary-treasurer of the group.

Other officers for the coming year are: District I (Northeast) Vice President Hoke McConnell, McConnell Fertilizer Co., Royston; District II (Northwest) Vice President John P. Porter, F. S. Royster Guano Co., Atlanta; District III (Southeast) Vice President Charles Ellis, Mutual Fertilizer Co., Savannah; and District IV (Southwest) Vice President Loy Everett, Virginia-Carolina Chemical Corp., Albany.

Directors for the new term—District I: W. C. Donald, Toccoa; P. D. Temple, Danielsville; and C. A. DeBeaugrine, Augusta Fertilizer Works, Augusta. District II: W. T. Spradlin, Farmers Mutual Exchange, LaGrange; Watts Gunn, Chilean Nitrate Sales Co., Atlanta; and Ralph Boynton, U. S. Potash Co., Atlanta. District III: W. A. Hendrix, Metter; David W. Reed, Evans, Reed & Williams, Sylvania; and W. W. Brinson, Lovett & Brinson, Dublin. District IV: W. P. Burke, International Minerals & Chemical Corp., Albany; Ridley Monk, Southeastern Liquid Fertilizer Co., Albany; and W. E. Shepard, Shepard Fertilizer Co., Moultrie.

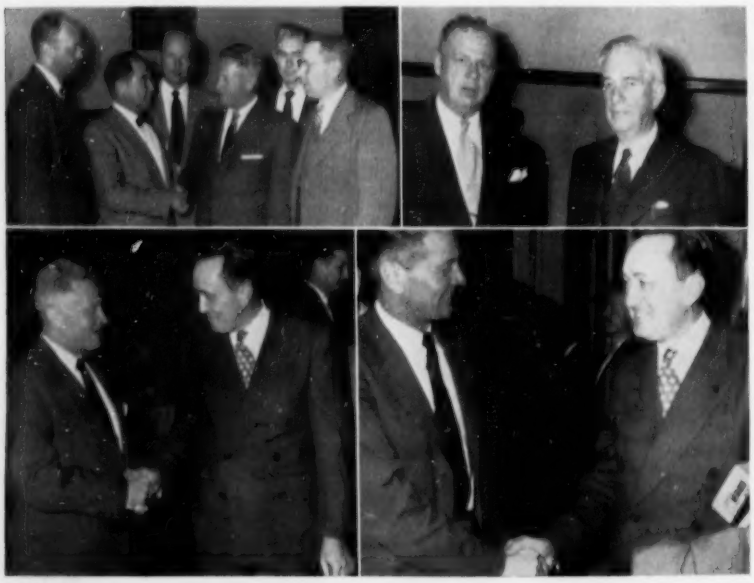
Excellent attendance was an outstanding feature of the session at Conner Hall on the campus of the University of Georgia, despite a lack of cooperation from the weatherman. Following an invocation by Walter Brown and a word of welcome from Dean C. C. Murray of the College of Agriculture, W. A. Sutton, associate director of the Agricultural Extension Service, thanked the society for its "valuable service to the state as an organization." The way it spearheaded the reduction in approved grades from 40 to 11 indicated the group's "togetherness" with the best interests of all phases of agricultural progress, he said.

Elton Perry explained fertilizer aspects of the state's ACP program, emphasizing that the federal government has wisely left administration of the program at the state level. Of the 30% increase in funds for 1955, he said that an undetermined amount had already been used in the emergency drought alleviation during the fall of 1954. Cost-sharing on fertilizer will be more liberal this year, he predicted, going as high as 50% of the delivered cost of the mixed goods, including the nitrogen content. Due to the tendency toward procrastination, he pointed out, the requirement for soil testing has been abandoned; soil tests will be used if there is a recent one available, otherwise the state handbook recommendations will be followed. Also, Mr. Perry emphasized, this year there is no specific application rate, but instead there is a stated range of maximum and minimum application rates. However, farmers who harvest in excess of allotments on basic crops, he warned, must forego ACP cost sharing.

In a session titled "The Credit Problem As It Affects Fertilizer Use," Harold Dinges, assistant general sales manager of Spencer Chemical Co., Kansas City, spoke on industry-farmer-banker relations. He offered some excellent suggestions in selling bankers on the importance of loans to farmers of working capital to use as a production tool. Analyzing three specific Georgia farms, he pointed out how tremendously the need for working capital has grown in size and in importance as agriculture has progressed from a "way of life" to a scientific scheme of production.

Calculating returns obtained from these loans, Mr. Dinges showed how the farmer makes each borrowed dollar produce far more profit than

**Upper left:** New officers of the Georgia Plant Food Educational Society, elected at the group's Athens meeting last month (left to right)—NW Vice President John P. Porter, F. S. Royster Guano Co., Atlanta; President W. W. Harley, Southern Fertilizer & Chemical Co., Savannah; SW Vice President Loy Everett, Virginia-Carolina Chemical Corp., Albany; retiring President (now director-at-large) W. A. Higginbotham, Armour Fertilizer Works, Albany; Secretary-Treasurer J. Fielding Reed, American Potash Institute, Atlanta; SE Vice President Charles Ellis, Mutual Fertilizer Co., Savannah. (Not pictured is NE Vice President Hoke McConnell, McConnell Fertilizer Co., Royston.) **Upper right:** Featured guest speakers on the meeting's program were Harold Dinges, Spencer Chemical Co., Kansas City, and Henry S. Cohen, of Moultrie National Bank, immediate past-president of Georgia Bankers Assn. **Lower left:** W. A. Higginbotham, master of ceremonies at the joint banquet with Ga. Section of ASA, greets the speaker for the evening, Dr. George E. Smith of the Department of Soils, University of Missouri. **Lower right:** Dr. Smith (right) with Dr. Glenn W. Burton, principal geneticist, USDA, Coastal Plains Experiment Station, Tifton, Ga.



does the fertilizer manufacturer or any other typical borrower. In summary, he made recommendations about how the Plant Food Educational Society and individual fertilizer firms can demonstrate the sound value and economic wisdom of planned loans by bankers to farmers.

Henry S. Cohen, executive vice president of Moultrie National Bank and immediate past president of Georgia Bankers Association, followed with an interesting and amusing talk on farmer-banker relations. Too many farmers think of the banker, he

Merriment reigned supreme for a time as Spencer Chemical Co. entertained the Georgia Plant Food Educational Society and the Georgia Section, American Society of Agronomy, following the joint banquet of the two organizations at Athens January 18. Scene of the festivities was the ballroom-turned-theatre of the Georgian Hotel. Stars of the performance included many notables from the industry and its suppliers along with the Spencer folks and some professional entertainers. An elaborate program outlined the evening's events in five acts. "Let's Get Acquainted" led off as guests (many decked out as hoboes) passed along receiving line of Spencer "hoboes" to a table laden with refreshments and snacks. Act II featured "Fertilizer Bags on Parade." Act III, more refreshments. Act IV boasted barber shop quartets, composed of industry folks, harmonizing on Gay Nineties tunes and inviting the audience to join in the song. Act V was "the works"—the main event, the big show—staged in a lower East Side Beer Garden and displaying heretofore-undiscovered talent on the part of prominent fertilizer men and their wives. Despite failure of the footlights at this point, Master-of-Ceremonies Jim Reed—with the help of a couple of kerosene lamps which were part of the props—kept the lively chain of events (and the audience, too) rolling.

Here are a few pictures from the gala evening: **1.** Can-can by candlelight in Act V. **2.** Beer garden songbird sounds off with full encouragement from "waiter" Ed Parker in the background. **3.** Haunting favorites sung by costumed Mrs. H. M. Arnold, Monroe (same singing waiter in the background). **4.** Bevy of beauties from University of Georgia Sororities in "Parade of Bags" . . . no cause for a pun here. **5.** Joe Shepherd, Virginia-Carolina Chemical Corp., Atlanta, escorts "Miss V-C of '55" onstage. **6.** Bags from Southern Fertilizer & Chemical Co., Savannah, formed infantwear costumes for this trio of professional entertainers. **7.** "Miss Fowler Fertilizer" represents the Covington firm. **8.** "Miss Dixie." **9.** IMC's "Miss Rainbow." **10.** "Miss Selfco" (Southeastern Liquid Fertilizer Co.) **11.** "Miss Blue Belt," of Blue Belt Fertilizer Co., Savannah. **12.** Barber shop quartet: Jeff Davis, Southeastern Liquid Fertilizer Co., Albany; Loy Everett, Virginia-Carolina Chemical Corp., Albany; W. A. Higginbotham, Armour Fertilizer Works, Albany; and Harold Dinges, Spencer Chemical Co., Kansas City. **13.** Spencer hosts on the stage at the finale of bag parade. **14.** Cartoon-like "Ferty" from Southern States Phosphate & Fertilizer Co., Savannah, is ushered to the forefront. **15.** "Green Giant" from Rowe Warehouse & Fertilizer Co., Athens, tests his strength beside Spencer's "Mr. N." **16.** "Miss Mutual"—from the firm of the same name, in Savannah—and "Miss Empire State," representing Hodgson's, Inc., Athens. **17.** "Miss V-C" stands ready to cut Virginia-Carolina's 60th birthday cake as Joe Shepherd, (at right) V-C Atlanta, blows out candles; V-C's Loy Everett, (left) Albany, and Paul Renfro, Savannah, stand by to help out with the wishes. **18.** Beer garden "customers" (who are part of the act) wait for floor show. **19.** "After the ball was over" it looked as if everyone had a good time, as this deserted punchbowl labelled "Spensol" attests. Other punchbowls, equally deserted amid the remains, were labelled "A.P.A." and "Potash."

claimed, as "the fellow who'll lend you an umbrella when the sun is shining and then—as soon as it starts to rain—he wants it back . . . when it wasn't even his umbrella to begin with." But today's progressive, better-informed rural banker often feels that the farmer doesn't make enough use of his credit, he concluded, and doesn't borrow enough money to begin with—or sets for himself repayment terms that are too drastic.

After a recess, committee reports were heard and Dr. C. Reynolds Clark, state chemist, spoke briefly. He reviewed chlorine content regulations and outlined the agriculture department's policy in this regard. Dr. Clark also discussed some changes planned in the fertilizer-pesticide mixture labelling requirements, in the style of sampling bottles and in sampling regulations on bulk and liquid fertilizers.

The meeting then adjourned to the Athens Country Club for a joint evening banquet session with the Georgia Section, American Society of Agronomy. Dr. George E. Smith, professor of soils at University of Missouri, was the speaker. Under the title "Soil Fertility—the Basis of High Crop Production" Dr. Smith presented a number of color slide projections reviewing some of the latest research by his department. He showed how, eliminating soil fertility as a factor, we can go a long way toward equalizing the productivity of soils. In order to use the extra fertility that fertilizers are now able to put into the soil, he emphasized, the plant population must be high enough to take full advantage of the added elements. Citing some of the recent studies in Missouri, he showed how a properly fertilizer plant has a strong enough root system to reach far down into the soil for reserve supplies of water during periods of sparse rainfall, while the weak plants which have not been given adequate applications of plant food cannot reach this reservoir. The farmer should capitalize on expensive irrigation equipment, he added, only after he has invested in the correction of all possible plant food deficiencies. In drouth years, he pointed out, the farmer often loses everything he has put into his crop effort except his fertilizer, for the residual effects from this application remain to help with the next crop. We haven't scratched the surface on fertilizer use yet, Dr. Smith concluded, for we have learned that "we can get the additional crop production when and if we need it."

# MORRIS HEADS GEORGIA AGRONOMISTS

Harold D. Morris was elected to the chairmanship of the Georgia Section, American Society of Agronomy, succeeding Julius M. Elrod, at the section's annual winter meeting in Athens January 17-19. Julian Miller became vice chairman of the group, following Joel Giddens who held the post last year. Hayden Rogers continues as permanent treasurer for the section.

The first day of the meeting was devoted to special committee sessions called by the various chairmen. The second day saw a staff meeting and committee reports of University agronomists, followed by a joint banquet with the Georgia Plant Food Educational Society at the Athens Country Club that evening. (See Ga. PFES story in this issue for summary of the evening gathering.

A full program was scheduled for the final day of the meeting, with reports of recent experiments and studies packing both the morning and afternoon sessions. After a message of welcome from Dr. C. C. Murray, dean and director of the College of Agriculture at the University of Georgia, and the introduction of guests, the scheduled talks got off to a flying start and maintained a split-second timing (thanks to an alarm clock) for the remainder of the day.

Harold D. Morris, new chairman of the Georgia Section, American Society of Agronomy, received congratulations from Julius M. Elrod (right), retiring chairman of the section.

First came a report on "Factors Influencing Availability of Trace Elements" by A. A. Nikitin, followed by J. A. Hunter's "The Soil, Pecan Trees and the Drouth of 1954."

"The Effects of Three Rates of Fertilizer on the Yields and Other Agronomic Characters of Oats on Cecil Sandy Loam" by H. D. Morris, D. D. Morey and A. R. Brown came next. Then J. G. Futral spoke on "Fertilizer Placement for Peanuts."

"Use of Aspergillus Niger for Determing Potash in Georgia Soils" by R. H. Troupe, Joel Giddens and H. F. Perkins concluded the first portion of the pre-noon session.

After a brief recess H. B. Harris, E. S. Luttrell and J. W. Dobson, Jr., gave a "Progress Report on Grain Sorghum Investigations." Then S. B. Parkman and L. F. Bauman's summary on "Interaction of Hybrids with Locations in Corn Testing Program" was presented, followed by "Field Plot Technique in Corn Performance Tests" from A. A. Fleming and G. M. Kozelnicky.

Mr. Kozelnicky also presented "Studies on the GT112 Seedling Disease Complex." Then G. A. Lebedeff gave his "Preliminary Report on the Inheritance of Loose Pericarp in Corn."

"Effects of Plant Characteristics on Mechanical Corn Harvesting Efficiency" by J. L. Butler was followed by J. H. Machmer's "Evaluating

(Continued on page 62)

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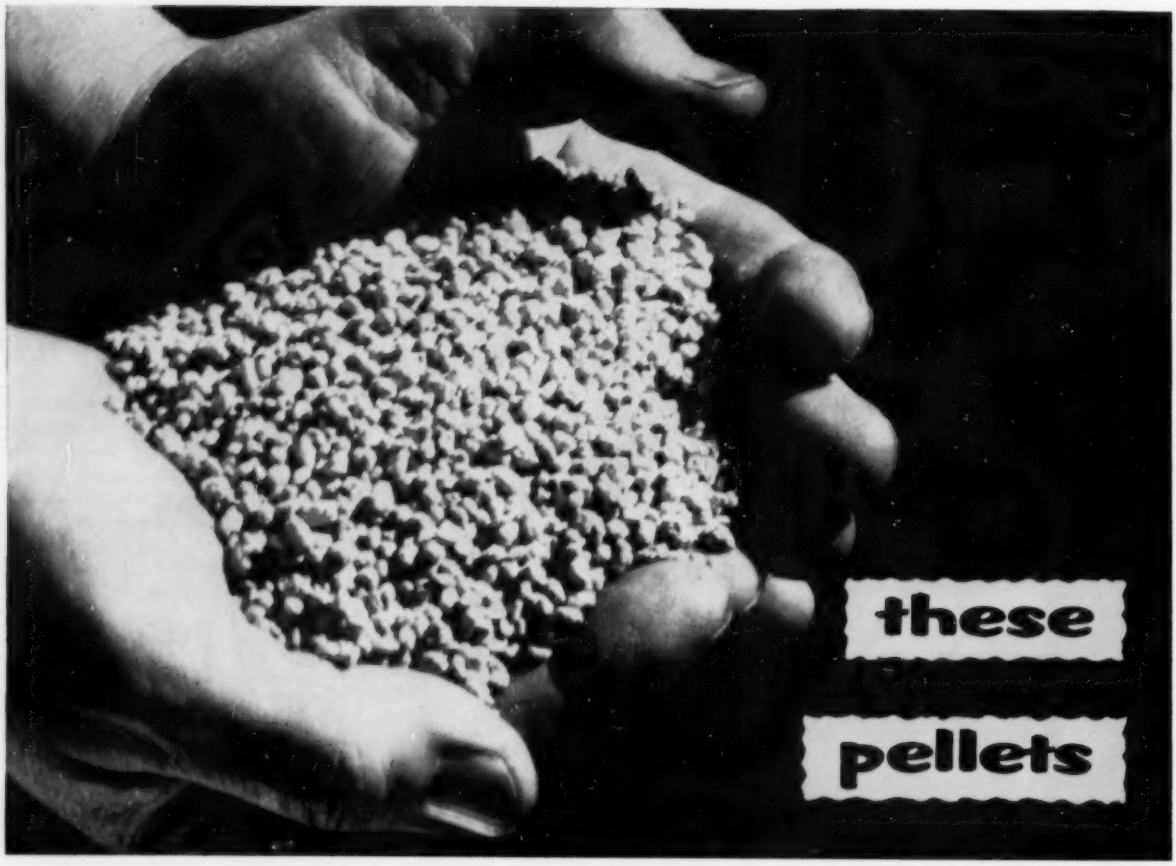


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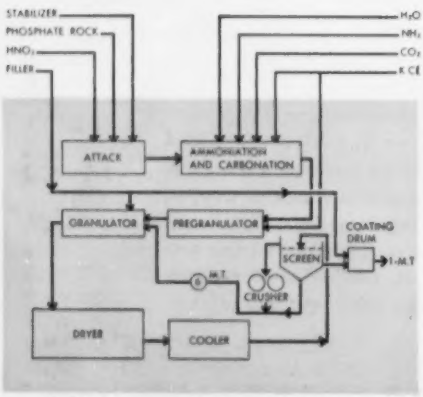


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# MISSISSIPPI SECTION ELECTS MILES, HEARS KELLOGG AT MEETING

Dr. Ivan E. Miles, Extension Service agronomist, was elected president of the Mississippi Section of the American Society of Agronomy for the coming year. He succeeds Harrison Evans of Shuqualak. His election was announced January 14 at the second annual meeting of the group by Dr. C. Dale Hoover, secretary-treasurer. Dr. Hoover, as head of the Mississippi State College department of agronomy, continues as ex-officio secretary-treasurer of the section. Dr. William L. Giles, superintendent of the Delta Branch Experiment Station, Stoneville, was elected first vice president, in balloting by mail. J. T. Caldwell, Jr., of Jackson was elected second vice president.

Dr. Hoover, in his annual report, said that the section's membership increased to 220 by December 31, and that several new members have been received since then. Approximately 225 county agents, state and federal employees, vocational agriculture teachers, farmers, and commercial representatives attended the meeting in the Alumni Building.

More research on basic agricultural management was recommended by practically every speaker at the meeting.

After a welcome by Dr. Clay Lyle, dean and director of the Agricultural Division of the college, the group heard Dr. Charles E. Kellogg of Washington, D. C.; Perrin Grissom of Stoneville; Dr. W. B. Ennis of State College; H. S. Saucier of Meridian; Rex Kimbriel of Greenville; Dr. J. D. Lancaster of State College; Dr. R. Q. Parks of Memphis; T. E. Ellis of Caledonia, and T. M. Waller of State College.

Dr. Kellogg, who is assistant administrator for soil survey, Soil Conservation Service, USDA, pointed out the influence of traditions established by centuries of unscientific farming. "We now know how to predict

## Key To Pictures Below:

1. Mississippi State College Alumni and Student Building, site of the meeting of Mississippi Section, American Society of Agronomy. 2. Dr. Clay Lyle, dean and director, Agricultural Division, Mississippi State College; Dr. Ben Hilburn, MSC president; Charles E. Kellogg, assistant administrator for Soil Survey, Soil Conservation Service, USDA, Washington; Harrison Evans, retiring president of Mississippi Section, ASA; Dr. R. Q. Parks, manager of Agricultural Service, Grace Chemical Co., Memphis. 3. J. K. Morgan and James Woodall of Mississippi Federated Cooperatives, Jackson, and Ward Seat, Mississippi Chemical Co. 4. Ed Hubbard, Spencer Chemical Co., and Prof. J. L. Anthony, MSC. 5. Perrin Grissom, Stoneville Experiment Station, and Dr. Baxter Andrews, MSC. 6. "Rip" Bounds, Meridian Fertilizer; Mr. Cowart, MSC; Frank Boyd, Virginia-Carolina Chemical Corp., Montgomery, Ala. 7. Dr. Ivan Miles, MSC, and Dr. U. S. Jones, Olin Mathieson Chemical Corp. 8. Dr. & Mrs. Louise Wise MSC. 9. E. F. Cater, Crown Chemical Co., West Point, and Jim Young, International Minerals & Chemical Corp., Tupelo. 10. Mr. & Mrs. M. R. Calder, Magee Cooperative, Magee. 11. Robert Harding, Valley Fertilizer Co., Greenville, and Marion G. Field, Meridian Fertilizer Factory, Hattiesburg.

the exact reaction of given soil to a given set of management practices," he said. "We need to carry this information to the farmers who are not making the most of their opportunities for production, and we need more basic research on the interrelationship and application of up-to-date soil data."

Dr. Parks, Memphis manager of the agricultural service of the Grace Chemical Company, advocated the steady year-round use of farms. He pointed out that the use of commercial fertilizers, which are especially important for winter crops in the South, has quadrupled during the past 15 years. "More research is needed on the mixing and applying of fertilizers," Dr. Parks said. "The average farmer uses less than half the amount of fertilizer needed for best results. More research on the response of crops to fertilizers should solve the fertilizer problems of both the farmer and the manufacturer."

Mr. Kimbriel, president of the Mississippi Rice Marketing Association, announced that this association has granted a five-year scholarship to Horace Rouse Caffey of Lambert, a graduate student at State College. The plan is to have him spend half of his time doing graduate work, and the other half in the employment of the Rice Marketing Association. Mr. Caffey is an outstanding graduate of the Mississippi School of Agriculture.

Dr. Lancaster, an Experiment Station agronomist, pointed out the problems encountered in research to determine the response of crops to fertilizers under varying conditions.

Mr. Ellis, vocational agriculture teacher in the Caledonia High School, told of the value of agronomic instruction to future farmers.

Mr. Grissom, Delta Branch Experiment Station agronomist, told of deep tillage to conserve moisture for growing crops. He also described the tremendous increases in production resulting from irrigation of truck crops, cotton, and pastures. "At Stoneville we obtained an increase of a thousand pounds of cotton per acre through irrigating, and this cotton was just as good as that produced without irrigation," he said. "Last year, in the Delta, over 40,000 acres were irrigated. I predict that over 150,000 acres will be irrigated there next summer."

Mr. Saucier showed that coastal Bermuda grass is a very desirable crop for grazing, hay, or silage, provided that it is managed properly. He showed that its yield can be greatly increased by the proper application of nitrogenous fertilizers.

Dr. Ennis, in charge of a regional weed control project for the USDA, said that chemical weed control is here to stay. He showed the labor-saving results obtained by applying various chemicals.

Mr. Waller, Extension Service specialist on cotton production, described the increased production of cotton resulting on many farms as a result of the Extension-sponsored Five-Acre Cotton Contests. "The application of our recommendations on the poorer half of the cotton acreage of Mississippi would result in an increase of a bale an acre this year," he concluded. "If this could be done, it would increase the farm income of Mississippi by 170 million dollars a year."

At the business session, Marion G. Field of Hattiesburg, on behalf of the National Fertilizer Association, presented the NFA scholarship plaque to Richard A. Graves of Tutwiler, the student recipient of this year's scholarship.

**Top Left:** Dr. Charles E. Kellogg, assistant administrator for soil survey, Soil Conservation Service, USDA, Washington, who addressed the Mississippi section, American Society of Agronomy, at its January 14 meeting in State College, Miss. **Top Right:** Marion G. Field, Meridian Fertilizer Factory, Hattiesburg, presents plaque to Richard A. Graves of Tutwiler, agronomy senior and recipient of this year's $200 scholarship from NFA. **Below:** New officers of the Mississippi section, ASA, are Dr. William L. Giles, Starksville, superintendent of the Delta Branch Experiment Station, president; Dr. Ivan E. Miles of State College, Extension Service agronomist, first vice president; and Dr. C. Dale Hoover of State College, head of the Agronomy Department and ex-officio secretary-treasurer of the section. J. T. Caldwell, Jr., of Jackson, second vice president does not appear in this picture.

## GA. AGRONOMISTS

(Continued from page 58)

Soil Separable Nematodes of Corn in South Georgia."

W. H. Freeman's paper "The Occurrence of Genes for Fertility Restoration on the Texas Cytoplasmic Male Sterile in Some Southern Corn Varieties" was the final report of the morning program.

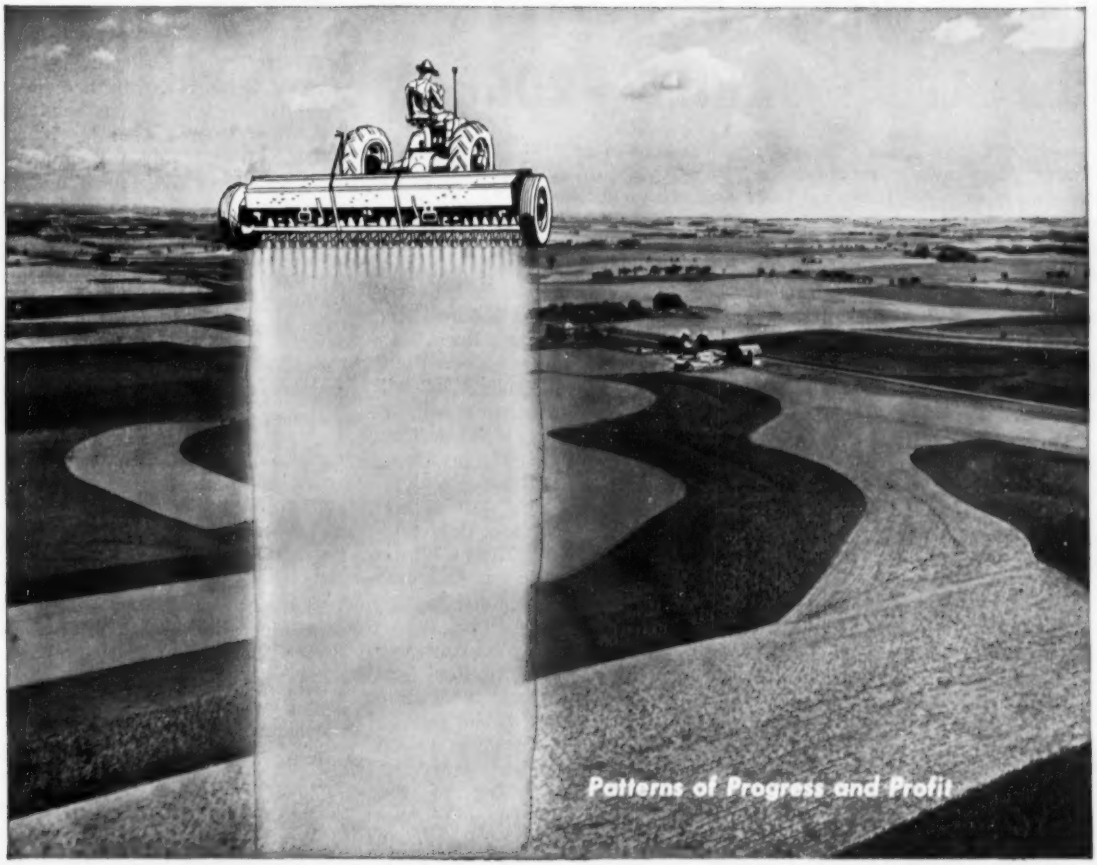
Joel Giddens took over the gavel from J. M. Elrod to preside at the afternoon meeting, which began with a graphically-illustrated talk on "Influence of Cultural Practices on Composition of Tobacco" by J. G. Gaines.

E. C. Westbrook discussed "Some Factors Which Affect Cotton Yields" and E. H. DeVane reported on "Performance of Several Forage Species During the Drought."

"Preliminary Report on the Efficiency of Anhydrous Ammonia vs. Ammonium Nitrate Nitrogen on Coastal Bermuda Sod During 1954" was presented by G. M. Prine. Due to extraneous factors, including the extremely dry season, the abstract of this preliminary study could not be considered conclusive and was therefore not cleared for publication.

J. G. Futral, who had previously appeared on the morning section of the program, returned with an encouraging report on "Weed Control in Cotton." Next came Ian Forbes with an abstract on "Emerald Zoysia—an Improved Hybrid Lawngrass for the South," illustrated with slides showing comparative characteristics in various performance tests.

H. A. Inglis was final speaker with a resume of "New Varieties Coming Up for Certification in 1955." A business session highlighted by installation of the new slate of officers brought the three-day assembly to a close.

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# MIDDLE WEST SOILS MEET TO FEATURE VARIED PROGRAM

Round table discussions of more efficient, cost-cutting methods of producing corn, small grains and legume grass crops and reports on the latest results of fertilizer research will headline the program of the forthcoming annual February joint meeting of Midwestern agronomists and fertilizer industry representatives at the Palmer House in Chicago.

The two-day meeting will open on Thursday afternoon, February 17 and run through noon Friday, February 18. Nearly 500 are expected to attend the meeting which is sponsored by the Middle West Soil Improvement Committee. Dr. F. W. Smith, Kansas State College, will be chairman of the meeting.

The Thursday, February 17, session will open at 1 p. m. with a welcome to the soils men and visitors by H. S. Vorhes, MWSIC president.

A. J. Attoe, University of Wisconsin, will be the lead-off speaker with a report on "Sure Fire Alfalfa Production." John MacGregor, University of Minnesota will follow with a discussion of "Fall vs. Spring Application of Nitrogen Fertilizer," and John R. Webb, Iowa State College, will report on the "Significance of Water Solubility in Phosphatic Fertilizers."

"The Effect of Fertilizers on the Establishment and Maintenance of Legume-Grass Mixtures" will be the subject of a discussion by Richard Swenson, Michigan State College. John Falloon, University of Missouri, will report on "MWSIC-sponsored Research in Missouri," and M. B. Russell, University of Illinois, will discuss "Yield Potentials of Corn Belt Crops."

Final speaker on the Thursday program will be Russell Coleman, president of the National Fertilizer Association, whose subject will be "Fertilizer Economics in a period of Surpluses."

The theme of the Friday morning program will be "Efficiency in Crop Production." Beginning at 9 a. m. will be a discussion of "Efficient Tillage Practices," led by R. L. Cook.

A symposium on "Efficient Corn Production" is scheduled next, with H. J. Mederski, Ohio State University reporting on the Eastern Corn Belt, and E. R. Duncan, Iowa State College on the Western Corn Belt.

"Efficient Wheat Production" will be the subject of another panel participated in by soils specialists from three different wheat producing areas. S. A. Barber, Purdue University, will report on "Soft Winter Wheat;" Robert A. Olson, University of Nebraska on "Hard Winter Wheat;" and E. B. Norum, University of North Dakota, on "Spring Wheat."

The Friday morning program will conclude with a report by Paul Burson, University of Minnesota, presenting the agronomists' suggestions for recommended fertilizer grades and ratios in the coming year.

For two days preceding the joint meeting, the agronomists will attend a series of meetings of the North Central Soils Research Committee at the Palmer House in Chicago.

As was the case last year, soils extension men from each of the 13 Corn Belt states have been invited to join the research men in attending the joint meeting. Z. H. Beers, executive secretary of the Middle West Soil Improvement Committee, pointed out that over the years the February meeting has been steadily expanding in scope, subject matter and attendance; a welcome to attend the meeting is extended to representatives of other groups, individuals and organizations allied with the fertilizer industry. While the joint meeting is primarily for the agronomists and fertilizer industry men, the program may be of great interest to representatives of companies in the farm equipment, insecticide, seed, supplies, transportation and related fields.

## Jeffrey Opens Western Office

The Jeffrey Manufactuirng Company of Columbus, Ohio has opened a western territory sales headquarters, it was announced by Lincoln Kilbourne, general sales manager of its Conveyor Division. Stanley M. Mercier, for the past fifteen years chief engineer of this division in Columbus, Ohio, has been appointed manager with offices in the Flood Building at 870 Market Street, San Francisco, California.

## OBITUARIES

**Ches Abernathy, Sr.,** 69, retired, associated with Southern Cotton Oil Co. at Gastonia and Selma, N. C., Jan. 18, in Vidalia, Ga.

**Charles Belknap,** 74, former president Monsanto Chemical Co., Dec. 29, in St. Louis, Mo.

**W. Fletcher Bergman,** 65, president Blackstone Guano Co., Dec. 26, Blackstone, Va.

**John Dewey Brock,** 46, Texas Farm Products Co., Dec. 28, Nacogdoches, Texas.

**J. Stewart Campbell,** 82, retired vice president Read Phosphate Co., Jan. 7, Nashville, Tenn.

**Claude Pugh Brown,** 75, vice president, W. C. Bradley Co., Jan. 16, Columbus, Ga.

**Zachariah R. Hallock,** 69, President Atlantic Fertilizer Co. of Jamesport, Dec. 23, Riverhead, L. I., New York.

**Dr. William M. Jardine,** 76, Secretary of Agriculture in President Coolidge's cabinet, Jan. 17, in San Antonio, Texas.

**Alfred Martin Marshall,** 71, retired fertilizer manufacturer and farmer, Jan. 2, in Estill, S. C.

**E. B. Roberts,** retired manager Peoria (Ill.) plant of Bemis Bro. Bag Co., Jan. 9.

**Theodore Jervey Simons,** 90, former general manager, Maybank Fertilizer Co., Dec. 27, in Charleston, S. C.

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Fur-Ag reduces bag-set, promotes drillability, speeds up curing in the pile, and provides bulk. It is sterilized—free from plant diseases, insects, weed-seeds—and is dark in color. Fur-Ag is an inexpensive organic conditioner that is produced in volume the year around and shipped in bulk or bag. Proved thru use by leading fertilizer manufacturers. Write for complete information—Bulletin 127.

The Quaker Oats Company

CHEMICALS DEPARTMENT

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# S

# STEDMAN

## FERTILIZER PLANT EQUIPMENT

**Established in 1834**

**All Steel Self-Contained Fertilizer Mixing and Bagging Units**

**Batch Mixers — Dry Batching**
**Pan Mixers — Wet Mixing**

**Tailings Pulverizers – Swing Hammer and Cage Type**

**Vibrating Screens** **Dust Weigh Hoppers**

**Acid Weigh Scales** **Batching Hoppers**

**Belt Conveyors — Stationary and Shuttle Types**

**Bucket Elevators** **Hoppers and Chutes**

**STEDMAN FOUNDRY & MACHINE COMPANY, INC.**
*Subsidiary of United Engineering and Foundry Company*
**General Office & Works: AURORA, INDIANA**

# Making Your Bags is Our Full-Time Job

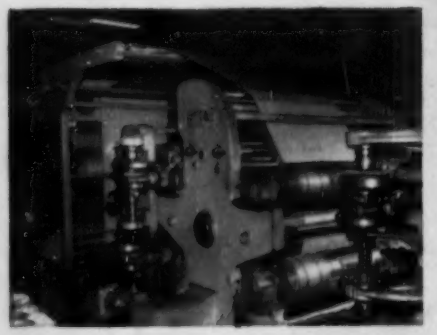
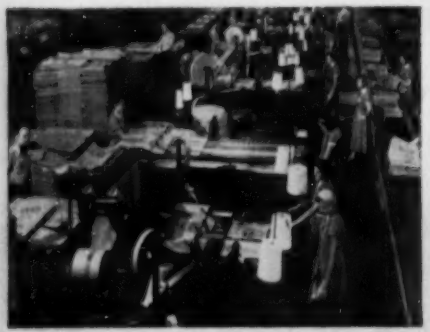


Photo at right shows V-C engravers making printing plates. Well-designed, expertly printed bags have real sales appeal—put your product out front. Photo above shows one of V-C's multi-color printing presses.



A battery of sewing machines staffed by highly-trained operators and inspectors. Modern machinery, skilled operators, and diligent inspectors, mean better-built, longer-lasting V-C Bags for your product.

**THE BAG** you use to package your product is only one of many items essential to your business success. But to the V-C Bag Division, the manufacture of better bags is a full-time job. That's why it will pay you to discuss your bag problems with a V-C representative. Possibly he can make suggestions that will improve or lower the cost of your packaging. Let him tell you about V-C's expert designing, printing, construction, and speedy service and delivery of V-C Multiwall Bags.

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MADE AS CAREFULLY AS YOUR BEST TAILORED SUIT

**Virginia-Carolina Chemical Corporation**

**BAG DIVISION:** 9th and Perry Streets, Richmond 5, Virginia

**DISTRICT SALES OFFICES:** Atlanta, Ga. • Wilmington, N. C. • New York, N. Y. • E. St. Louis, Ill. • Cincinnati, Ohio

# *Sanders Reports*

## OUTLOOK IN EUROPE

**James O'H. Sanders, who has spent most of his business years associated with the fertilizer industry, has just returned from a 7,000 mile motor trip in eight western European countries. Here are some of Jimmie's impressions of conditions in these countries—his viewpoint that of an observing American business man whose interests have been tied close to agriculture and its place in a nation's economy. —Ed.**

Probably the most vivid and permanent impression one brings home is of surging prosperity. In all the major cities of Europe are the unmistakable evidences of active business. Hotels, cafes, theatres and night clubs are filled with eager throngs, department stores and specialty shops crowded with shoppers, traffic congestion in city streets, motor roads lined with trucks carrying the products of busy factories. The tempo of life in Frankfort, Milan, Amsterdam and Brussells is more that of Pittsburgh, Detroit, and Cleveland than that of the leisurely pace of Old World cities. Even Vienna and Madrid are as impressive from this point of view as they are for the beauty of buildings, boulevards and parks. These visual evidences of prosperity are confirmed by the indices of production and trade which have soared to new highs in 1954—a year in which our own production suffered a modest decline. One cannot help feeling a sense of pride as an American that the wise and timely economic aid provided by our country was largely responsible for this resurgence of Western Europe from the prostrate condition in a sea of rubble ten years ago.

One advantage of travel in Europe by car is the opportunity to see the countryside not only on the main motor routes but also along secondary roads. Here one can observe the growing crops, the farmers at work in the fields, the produce being carried to market. General impressions are what you would expect,—small farms intensively cultivated, horse and oxen power still employed to a greater extent than tractors, and almost universal use of animal manures, the husbanding of all vegetable waste for land improvement and good water conservation practices. On the last point one has only to observe the beautifully terraced hillsides to realize that we didn't invent the practice but adopted what has been efficiently done in Europe for centuries. There is the futher conviction of the basic nature of agriculture in a nation's economy.

Spain is the least prosperous country visited and the one with less than normal agricultural resource,—due largely to lack of rainfall in the Northern half. Italy and Austria are somewhat better off agriculturally but the three countries trail behind the rest of Europe in the economic parade. This should not be construed to discount the industrial progress for, in countries like England, Switzerland and Belgium, industry is more important than agriculture but it seems to be true that a proper balance between the two is usually essential to overall national prosperity.

As a sample of agricultural practice and fertilizer usage in Europe, it might be of interest to make a brief analysis of conditions in the three Benelux countries, — The Netherlands, Belgium and Luxembourg since these are more or less typical of Northern Europe.

The agricultural economies of The Netherlands, Belgium and Luxembourg are similar and this fact is recognized by the Benelux agreements which provide for a common tariff schedule. While there are no tariffs or quantitative restrictions on trade among the three countries, Belgium enjoys protection on some items such as butter which may not be imported from Holland and sold at less than minimum prices fixed by the Belgian government. With minor exceptions there is free trade among the Benelux countries — an agreement that may foreshadow similar efforts to break down the complicated import and export restrictions that for generations have hindered trade in Western Europe.

Agriculture in the three countries is largely a grain and livestock economy, with a deficit in grain, but approaching self-sufficiency in livestock. There are only a little over three million hectares of land in all of Belgium. (A hectare is 2.47 acres). Of this total area somewhat more than half is farm land, divided into about 250,000 farmers of more than one hectare in size, plus a large number of holdings even smaller. The average size farm is 6.8 hectares (16.8 acres). The tiny farms are intensively cultivated and heavily fertilized which results in a large production per acre but at a relatively high cost. Almost half the land is in permanent pastures and of the remainder more than half produces feed for livestock. Wheat is the largest agricultural crop and production has increased from about 350,000 metric tons prewar to about 550,000 at present. Even of the wheat production some forty percent is fed to livestock. The second largest crop is sugar beets which provides enough sugar for domestic consumption and enables Belgium to export about 100,000 tons of refined sugar a year. Other major crops are potatoes, vegetables, fruits and flax. Apples and pears are exported and flax provides the raw material of the linen exports which are substantial. Indicating further that Belgium is more a livestock than a strictly agricultural economy, the largest source of income to farmers is milk and dairy products from a million cows. Belgium could well afford to follow Mr. Mendes-France's advice to French people and drink more of their own production of milk.

Holland is less industrialized than Belgium and more dependent on agriculture. The land is fertile and kept productive by large applications of manure and the heaviest use of commercial fertilizer per acre of any country in Europe. Wheat, sugar beets and potatoes are major crops and a large proportion of each is used for animal feed. The planting of flower bulbs and vegetable seeds are the largest in the world. All of us

are familiar with the immense production and export of bulbs from the Netherlands. It was therefore a surprise to me to learn that the value of this country's exports of hams was more than twice that of flower bulbs in 1953. Many of these Dutch hams are imported to the United States and sold in our chain groceries but apparently with no advertising emphasis on their foreign origin.

Another striking fact about agriculture, not only in Holland and Belgium but throughout Western Europe, is the uniformly excellent condition of the soil. In our country it is not customary to plow or work the soil when it is wet. In Europe plowing is done in wet soil and even during a light rain. In spite of this (to us) unusual practice there is no "clodding" in the fields. This may be due to a much greater percentage of humus in the soil, making it more friable, to some extent, to the more intense cultivation. There is enough labor to harrow the small fields more frequently and more thoroughly than we do at home.

Both The Netherlands and Belgium are important producers of chemical fertilizers which they use liberally in addition to large applications of animal manures. In the Netherlands nitrolime (20%) is the most important of the nitrogenous fertilizers (78% of the total produced) and calcium nitrate a poor second (8½%). They make about 117,000 tons of superphosphate supplementing this with 6,600 tons of basic slag—from Belgium and Luxembourg. Some 71,000 tons of superphosphate and 65,000 tons of sulphate of ammonia are exported annually. They have no potash deposits but import about 175,000 tons chiefly from Belgium and West Germany. A Dutch manufacturer (Mekog) is experimenting with extracting potash from the sea at Ijmuiden but apparently with no practical results as yet. The forecast for production and consumption for 1954-55 in terms of plant nutrient is as follows:—

| | Production | Consumption |
|---|---|---|
| N | 276,000 | 178,000 |
| $P_2O_5$ | 138,000 | 117,000 |
| $K_2$ | ——— | 167,000 |

During the year ended June 30, 1954 Belgium produced more than a million tons of nitrogenous fertilizer of all types which was 36,000 tons more than the previous year. Basic slag is the most important phosphate fertilizer produced, over a million tons being exported from Belgium and Luxembourg last year. Potash production in terms of $K_2O$ was estimated at 50,000 tons, a decrease of 12,000 from the previous year. Consumption of the three types in metric tons of plant nutrient was as follows:—

| | |
|---|---|
| N | 96,000 |
| $P_2O_5$ | 84,000 |
| $K_2O$ | 133,000 |

The chief items of export were 127,000 tons of ammonium nitrate, 492,000 tons of ammonium sulphate, 170,000 tons of ordinary and concentrated superphosphate, and 500,000 tons of potassium chloride. Principal imports were rock phosphate and raw potash salts.

Belgium is one of the most prosperous of the Western European nations now enjoying a remarkable economic recovery. Prices are high compared to prewar but wage levels have advanced and a drastic inflation avoided. The standard of living is one of the highest in Europe; industry and export trade are booming. The Netherlands, with less manufacturing capacity and lacking the coal resources of Belgium, is not quite as near the top of the heap but the country is making solid progress and their finances are in excellent condition. The streets of Amsterdam, The Hague and Rotterdam give ample proof that the Dutch are an active and diligent people. American, English and German cars fight their way through thousands of bicycles. Among these are some 300,000 that are motorized—most of them made in West Germany. The busy port of Antwerp seems to have more American cars than any other European city—except perhaps Zurich, Switzerland.

To the returning traveler whose senses are livened by many new and interested impressions he has received during his stay and travels in countries overseas, perhaps the most frequently asked question put to him is: What is the attitude toward Americans?—there being a general belief that dislike of Americans is widespread in some countries of Europe. But we found no evidence of ill will in any country visited and were treated with the utmost consideration and courtesy everywhere. In spite of surface differences there seemed to be a very real measure of mutual understanding.

# CF STAFF—COMPILED TONNAGE REPORTS

## FERTILIZER TONNAGE REPORTS (in equivalent short tons) Compiled by COMMERCIAL FERTILIZER Staff

| State | December 1954 | December 1953 | November 1954 | November 1953 | October 1954 | July-Aug.-Sept. Quarter 1954 | July-Aug.-Sept. Quarter 1953 | Year 1953-54 |
|---|---|---|---|---|---|---|---|---|
| Alabama | ..... | ..... | 73,310 | 29,729 | 95,870 | 77,244 | 64,373 | 1,087,763 |
| Arkansas | 10,951[2] | * | 9,583[1] | * | 16,471[1] | 22,882[1] | * | 366,225 |
| Georgia | 63,977 | 45,879 | 61,457 | 62,365 | 36,258 | 63,391 | 68,745 | 1,361,254 |
| Louisiana | 11,599 | 13,016 | 16,780 | 15,631 | 24,535 | 25,153 | 31,792 | 316,757 |
| Missouri | 20,816 | 33,337 | 15,836 | 22,355 | 83,927 | 147,678 | 140,041 | 756,457 |
| N. Carolina | 64,846 | 60,698 | 47,294 | 35,427 | 80,948 | 71,381 | 75,361 | 1,315,572 |
| Oklahoma | 2,211 | 4,870 | 4,080 | 4,818 | 21,914 | 30,201 | 47,269 | 144,367 |
| S. Carolina | 30,613 | 37,329 | 35,789 | 40,550 | 25,780 | 40,477 | 70,650 | 939,678 |
| Tennessee | 7,262 | 8,908 | 54,382 | 26,477 | 53,127 | 52,612 | 52,654 | 523,300 |
| Texas | 27,952 | 30,042 | 34,036 | 34,270 | 87,720 | 83,098 | 79,612 | 562,530 |
| California | | | (reports submitted quarterly) | | | 141,875 | 154,171 | 830,327 |
| Virginia | | | (reports submitted quarterly) | | | 77,959 | 80,445 | 780,931 |
| TOTAL | 229,276 | 234,079 | 342,964 | 271,622 | 510,079 | 791,075 | 865,113 | 9,485,161 |

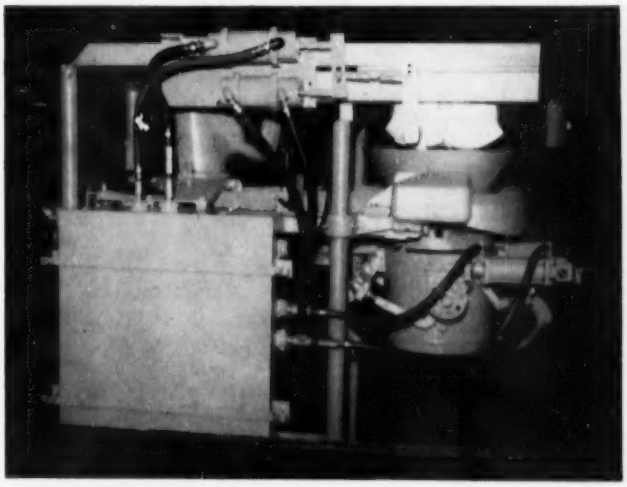
* Not Compiled [1] Omitted from column total to allow comparison. ..... (Not yet reported)

# SCHACHTE AUTOMATIC WEIGHING DEVICE

Model AJ 155

for attachment to
Exact Weight Bagging Scales

- Converts your manual bagging operation into a fast, accurate unit that clamps, weighs and releases bags automatically.
- No structural changes necessary for installation. The unit is attached to your present scale without any disruption of your operation.
- One unit will give more production and more accurate weights than is possible with two hand operated scales.



**MOLONY FERTILIZER COMPANY**

P. O. BOX 314 CHARLESTON, S. C. PHONE 4-5356


# MARKETS

**ORGANICS:** This market continues extremely tight with demand considerably in excess of available supplies. Practically no offerings of fertilizer grade organics are in the market except for delivery late spring and summer. Producers of Domestic Nitrogenous Tankage are completely sold up through the spring months and prices last paid were $4.15 to $4.25, and a few cars at $4.75 per unit of Ammonia, bulk, f.o.b. production points.

**CASTOR POMACE:** Practically no offerings are in the market as production is all under contract for several months ahead. New Jersey production is nominally $35.00 to $37.50 per ton, in bags, f.ob. production points. Texas/Oklahoma production last was sold at $35.00 in bags but supply appears to be completely under contract.

**DRIED BLOOD:** Chicago market is indicated at $6.75 to $7.00 per unit Ammonia, in bags, unground. The New York market remains nominal at $6.75.

**POTASH**: Volume of movement from domestic sources is increasing, primarily against contract commitments. No changes in the domestic contract prices have been noted. Imported Muriate of Potash is being offered by one importer at 52½¢ per unit K2O exvessel Atlantic ports subject to possible duty for buyers' account. Good tonnage has been sold on this basis and hearings to determine whether duty, if any, is to be applied will be held in Washington late January and early February.

**GROUND COTTON BUR ASH:** Interest continues in this excellent source of Potash, which is primarily in the form of Carbonate of Potash. Material is available for current and future shipment testing 38% to 40% K2O and delivers at approximately the same price as domestic Sulphate of Potash.

**PHOSPHATE ROCK:** As demand for Superphosphate increases in anticipation of spring requirements, the movement of Phosphate Rock to acidulators is now expanding. No change in price basis has been reported.

**SUPERPHOSPHATE:** Supplies of both normal and Triple grades continue somewhat more than adequate for current demand. Prices continue relatively firm.

**AMMONIUM NITRATE**: The usual tightness in the supply position that has appeared at this time during previous seasons is not present this season. Prices continue steady and unchanged.

**SULPHATE OF AMMONIA**: Demand is increasing somewhat and supply and demand are in better balance than recently.

**NITRATE OF SODA:** Demand is quite good for this time of the year and prices remain unchanged.

**GENERAL:** Most fertilizer ingredients continue to be in adequate supply except for organic sources of Nitrogen. Fertilizer manufacturers are preparing at a faster rate to furnish the necessary mixed fertilizers for the coming season.

# FLO-MIX APPLICATOR

## *Displays Unusual Method*

The Flo-Mix machine is claimed to be the first liquid applicator developed and placed on the market for fertilization of the soil with the three basic plant foods—potash, phosphate and nitrogen—and all in a single operation. The machine and method of application were perfected by John W. Dugan, 34, president of Production Fertilizers Corporation, an anhydrous ammonia distributing firm, and the new Flo-Mix Fertilizer Corporation, organized to distribute the Flo-Mix machine, both of Houma, La.

The applicator recently went into production after exhaustive tests over a two-year period on various types of pasture and farm lands proved its value for increased crop yield at a considerable saving to the farmer.

In one passage over the land, the machine treats the soil with applications of the three plant nutrients, at the desired depth, in required proportions based on soil tests and in even distribution on all types of terrain from marshlands to rocky hillsides, according to the manufacturer's statement.

This is accomplished through a system of high pressure tanks, connecting rubber hoses, gauges for regulating the flow, and cutting blades adjustable to any depth at any angle or for above the surface application on turf and pastures.

A constant 100-pound pressure in the air tank is maintained by a small air compressor geared to one of the forward trailer wheels by a chain-drive.

The first or forward unit carries two 60-gallon tanks for the potash concentration, another tank for phosphate, the air compressor and air tank, and the blade bar to which the cutting blades are attached. The second or rear unit carries a 500-gallon anhydrous ammonia tank. Attached to the rear of each blade are two metal tubes through which the three nutrients are forced into the ground. Both potash and phosphate flow through one tube while anhydrous ammonia flows through the other. They are connected to the tanks and flow rate gauges through a series of hoses.

Inventor Dugan's records show that lands on which the Flo-Mix application was used, production was increased 100 to 300 per cent over the previous year and over land on the same farms fertilized by other methods. In developing the machine and application method, he combined his own mechanical inclinations with the advice and cooperation of designing engineers, soil experts and agronomists and officials of extension services at several southern colleges.

The machine is flexible in that larger tanks can be installed and the blade bar widened from the normal six feet and five blades to 12 feet and 11 blades.

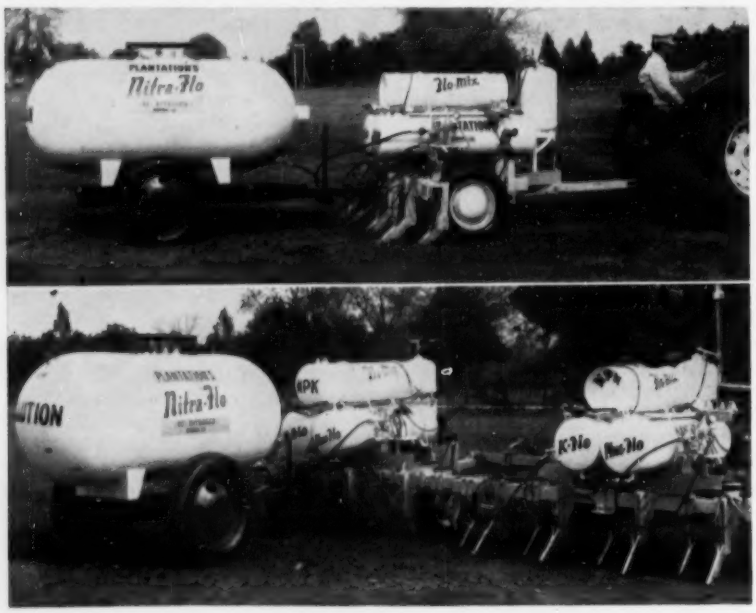
In using the Flow-Mix method it is claimed that the farmer fertilizes his land without getting his hands dirty. He attaches his tractor, loads the applicator from bulk storage, pulls it over the fields and adjusts the rate of flow from the driver's seat, using the forward and rear units separately or together.

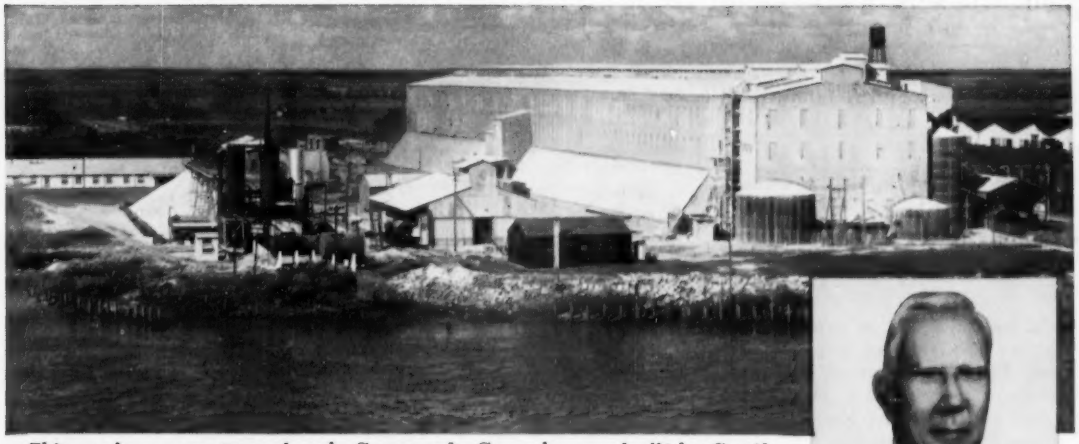
The Flo-Mix machine is assembled in the firm's plant at the old Houma naval air station, but the parts are supplied under contract by various manufacturers in the area.

The machine was demonstrated for the first time to the public at the annual conference of the Agricultural Ammonia Institute in New Orleans in December. Many who saw this demonstration were high in their praise of the machine and its application as being revolutionary in the liquid fertilization field.

John Dugan, a former Navy and airline pilot, entered the anhydrous ammonia field eight years ago as a novice with borrowed money and only one helper, building a business that grossed more than $1 million in 1954. His Flo-Mix machine has been developed over a period of years. While he built several applicator models, none proved entirely satisfactory until the present machine was finally produced with ideas drawn from its predecessors.

**Above:** "Profile" view shows rear unit (left) containing liquid nitrogen and forward unit with phosphate and potash solution tanks coupled behind tractor. **Below:** This photo illustrates how two applicator units coupled to a single yoke can double the area of distribution behind one tractor; applicator at left has rear (ammonia) unit connected, but this was omitted from rig at the right to allow more complete view of mechanism.



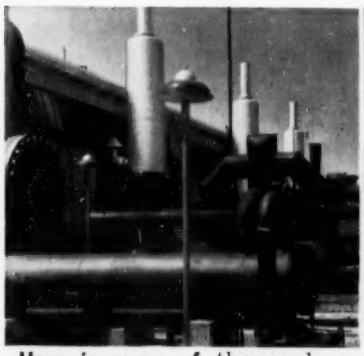


**This modern crane-type plant** in Savannah, Georgia, was built by Southern Fertilizer & Chemical Company after destruction by fire of its original plant. It is the first of five plants now owned by the company. Southern serves Georgia, South Carolina, and parts of four other states with Southern Fish Brand Fertilizers.

**Mr. A. D. Strobhar** organized the company in 1905. He has served as President for more than 35 years.

## SOUTHERN FERTILIZER & CHEMICAL CO.

## . . . Another Spensol User



**Here is some of** the modern equipment used by Spencer to produce SPENSOL Nitrogen Solutions for some of America's leading fertilizer mixers.

**On time deliveries** of SPENSOL solutions have helped to build Spencer's reputation for dependable service to mixers throughout the country.

**New kind of** solution injector, giving better ammoniation of mixed fertilizer, was invented by H. B. Davis of Spencer Chemical Company staff.

SPENCER

SPENCER CHEMICAL COMPANY, Dwight Bldg., Kansas City 5, Mo. District Sales Offices: Atlanta, Ga.; Chicago, Ill.; Memphis, Tenn.; Works: Pittsburg, Kans.; Henderson, Ky.; Chicago, Ill.; Vicksburg, Miss.; Orange, Texas (under construction).

*America's Growing Name in Chemicals*

# FARMERS CO-OP MEMBERSHIP HITS NEW HIGH, SAYS USDA

Total memberships in farmer cooperatives have reached a record 7.5 million, the U. S. Department of Agriculture has announced. Statistics compiled yearly by the Farmer Cooperative Service show this total for 1952-53, almost double the number of 10 years ago, although only slightly higher than the memberships of 1951-52. The 7.5 million memberships represent some 3 million individual farmers, many of them belonging to more than one cooperative.

The number of cooperatives showed a small drop—10,144 in 1952-53 compared with 10,166 the preceding year. The loss occurred in marketing and service cooperatives largely because of consolidations. Farm supply associations showed a significant gain in number, accounting for one-third of the total. They also moved up in their membership to 3.1 million, or more than 40 percent of the total.

Net value of the 1952-53 business transacted by farmer cooperatives, not including that between co-ops was $9.5 billion—a gain of $100 million over 1951-52.

Products sold for farmers who were members of marketing cooperatives had a net value of almost $7.4 billion in 1952-53. Dairy products led in value, with a net total of more than $2.4 billion. Second in rank was grain, including soybeans and soybean products, with a net value of almost $1.6 billion. Livestock and livestock products were third with a net value of slightly less than $1.5 billion.

The West North Central region led in the number of associations—3,975—with memberships of more

**Estimated number of associations, membership, and business of marketing, purchasing, and related service cooperatives, by States, 1952-53[1]**

| State | Number of associations with headquarters in State | Number of members in State | Net business after adjusting for duplication[2] $1,000 |
|---|---|---|---|
| New England | | | |
| Maine | 24 | 23,197 | 50,367 |
| New Hampshire | 13 | 11,740 | 29,297 |
| Vermont | 38 | 26,185 | 71,873 |
| Massachusetts | 44 | 35,210 | 64,899 |
| Rhode Island | 4 | 3,418 | 7,140 |
| Connecticut | 28 | 18,067 | 50,940 |
| Total | 151 | 117,817 | 274,516 |
| Middle Atlantic | | | |
| New York | 392 | 165,737 | 480,322 |
| New Jersey | 65 | 38,861 | 133,144 |
| Pennsylvania | 185 | 167,271 | 297,130 |
| Total | 642 | 371,869 | 910,596 |
| East North Central | | | |
| Ohio | 305 | 372,669 | 547,893 |
| Indiana | 151 | 390,497 | 375,072 |
| Illinois | 570 | 573,337 | 697,350 |
| Michigan | 239 | 197,429 | 282,368 |
| Wisconsin | 866 | 423,034 | 587,785 |
| Total | 2,131 | 1,956,966 | 2,490,468 |
| West North Central | | | |
| Minnesota | 1,330 | 570,401 | 649,174 |
| Iowa | 718 | 398,227 | 550,528 |
| Missouri | 286 | 439,315 | 297,578 |
| North Dakota | 549 | 241,107 | 242,475 |
| South Dakota | 321 | 155,880 | 179,647 |
| Nebraska | 414 | 234,058 | 234,595 |
| Kansas | 357 | 168,432 | 294,039 |
| Total | 3,975 | 2,207,420 | 2,448,036 |
| South Atlantic | | | |
| Delaware | 15 | 17,289 | 19,372 |
| Maryland | 63 | 77,061 | 94,005 |
| District of Columbia | 1 | [3] | [3] |
| Virginia | 138 | 241,153 | 144,346 |
| West Virginia | 72 | 55,036 | 31,599 |
| North Carolina | 88 | 405,856 | 129,034 |
| South Carolina | 34 | 59,225 | 18,536 |
| Georgia | 81 | 107,415 | 68,145 |
| Florida | 107 | 21,369 | 125,264 |
| Total | 599 | 984,404 | 630,301 |
| East South Central | | | |
| Kentucky | 79 | 376,420 | 118,285 |
| Tennessee | 111 | 178,451 | 57,760 |
| Alabama | 55 | 83,737 | 33,818 |
| Mississippi | 132 | 126,452 | 124,822 |
| Total | 377 | 765,060 | 334,685 |
| West South Central | | | |
| Arkansas | 115 | 67,452 | 89,658 |
| Louisiana | 53 | 26,158 | 46,010 |
| Oklahoma | 207 | 147,686 | 151,274 |
| Texas | 539 | 216,897 | 380,981 |
| Total | 914 | 458,193 | 667,923 |
| Mountain | | | |
| Montana | 182 | 67,038 | 101,230 |
| Idaho | 106 | 60,586 | 101,464 |
| Wyoming | 26 | 17,305 | 27,320 |
| Colorado | 112 | 68,729 | 163,320 |
| New Mexico | 30 | 10,862 | 33,162 |
| Arizona | 12 | 41,409 | 22,944 |
| Utah | 70 | 34,395 | 82,378 |
| Nevada | 4 | 989 | 4,417 |
| Total | 542 | 301,313 | 536,235 |
| Pacific | | | |
| Washington | 194 | 108,166 | 279,048 |
| Oregon | 128 | 71,808 | 164,898 |
| California | 461 | 131,479 | 803,256 |
| Total | 783 | 311,453 | 1,247,202 |
| United States | 10,114 | 7,474,495 | 9,539,962 |

[1] Preliminary.
[2] This figure represents value at the first level at which cooperatives transact business for farmers. It does not include wholesale business of farm supply cooperatives with other cooperatives or terminal market sales for local associations.
[3] The membership of this association is credited to the States in which it is located and the value of farm products marketed is credited to the States in which they originated and the value of farm supplies is credited to the States in which they are sold.

than 2 million and a net business valued at more than $2.4 billion.

Second in number of associations was the East North Central region with 2,131 groups and memberships of just under 2 million; net business transacted was higher of all regions —slightly less than $2.5 billion.

Minnesota had the largest number of associations — 1,330; Wisconsin second with 866; Iowa third with 718. Illinois led in membership with 573,337, Minnesota second, 570,401, and Missouri third with 439,315.

California led the nation in value of business transacted. With 461 associations and a membership of 131,-479, California showed a net value of slightly more than $803 million. Illinois was in second place with net business valued at more than $697 million, and Minnesota was third with a net of more than $649 million.

**Estimated business in specified commodity and service groups of marketing, farm supply and related service cooperatives, 1952-53[1]**

| Commodities | Number of Associations Handling | Gross Business | Net Business After Adjusting for Duplication[2] |
|---|---|---|---|
| | | $1,000 | $1,000 |
| Total marketing | [3]7,208 | 9,292,141 | 7,385,976 |
| Products marketed for patrons: | | | |
| Supplies purchased for patrons: | | | |
| Building material | 1,159 | 84,417 | 55,476 |
| Containers | 1,000 | 49,757 | 21,353 |
| Farm machinery and equipment | 1,791 | 114,885 | 74,285 |
| Feed | 4,238 | 1,118,087 | 847,992 |
| Fertilizer | 3,392 | 345,631 | 216,207 |
| Insecticides | 1,489 | 34,750 | 23,987 |
| Meats and groceries | 892 | 53,525 | 45,382 |
| Petroleum products | 2,654 | 674,940 | 436,274 |
| Seed | 3,371 | 133,992 | 101,252 |
| Other supplies | 4,261 | 255,617 | 190,253 |
| Total purchasing | [3]7,244 | 2,865,601 | 2,012,461 |
| Total Services | [3]4,268 | 141,525 | [4]141,525 |
| Total marketing, purchasing and service | [3]10,114 | 12,299,267 | 9,539,962 |

[1] Preliminary.
[2] This figure represents value at the first level at which cooperatives transact business for farmers. It does not include wholesale business for farmers. It does not include wholesale business of farm supply cooperatives with other cooperatives or terminal market for local associations.
[3] Because many associations are engaged in more than one type of business, these totals are less than the number that would be obtained by adding the number of associations handling individual items or performing individual services.
[4] Charges for services in which no duplication occurs.

## Bemis' "Mr. Little" Sleeve Valve For Multiwalls

A newly designed inner sleeve valve for multiwall paper fertilizer bags is being introduced by Bemis Bro. Bag Company. According to Bemis, "Mr. Little" sleeve valve, named for its inventors, offers cleaner, quicker, more positive closures than any other inner sleeve valve now offered commercially.

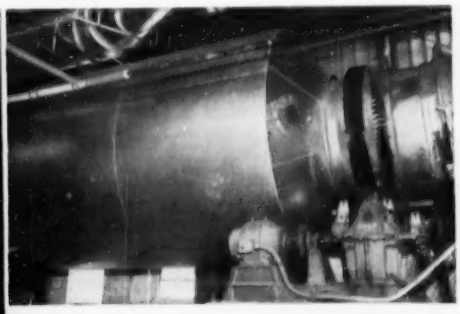
This valve is distinguished by the patterned creases in the valve sleeve and the unique design of the sleeve itself. It functions in much the same manner as a check valve in a water pipe, which permits the water to flow freely in one direction but not in the other. The sleeve design permits a firmer, more secure closure than other inner sleeves. It practically eliminates leakage and gives maximum sifting protection.

The valve's fast action on the packing spout keeps the product out of the valve pocket, which reduces the chance of moisture getting into the bag through the "wick" action of hygroscopic products.

At present the "Mr. Little" sleeve valve is supplied principally for the fertilizer trade, although it quite likely will find application for other granular and pelletized materials.


Chemicals are Dried Completely, Quickly, Economically in DehydrO-Mat*

* PAT. PENDING



**BUILT IN A WIDE RANGE OF CAPACITIES,** the DehydrO-Mat, though comparable in price, out-performs conventional dryers of similar size. Compact . . . easy to install in a minimum of space.

The DehydrO-Mat will not scorch or burn even the most sensitive chemicals. Air, not inclination, moves the material . . . quickly through the hot zone, slowly through the temperate zone. Since no boiler is necessary, the DehydrO-Mat can be in full operation from a cold start within ten minutes. DehydrO-Mats utilizing steam-heated air are also available.

*Consult the Renneburg Engineers on all your drying problems.*
*FREE literature and information on request.*

EDW. RENNEBURG & SONS CO.
Baltimore 24, Maryland, U.S.A.

# MID-SOUTH CHEMICAL COMPLETING EXPANSION

A 5,000,000 (12,000 ton) gallon storage system for anhydrous ammonia plus the nation's first river-rail-highway distribution facilities will be placed in operation about March 1 by Mid-South Chemical Co., Memphis, Tenn. Heart of the set-up will be an eight acre distribution center on Presidents Island, an industrial area off the Memphis riverfront with harbor facilities for Mississippi River transportation as well as rail and truck loading docks.

Mid-South officials have a specially constructed barge with a battery of six giant pressurized tanks built into the hull. The barge has a capacity of 800 tons of anhydrous ammonia. Installation has begun on fifteen 30,000 gallon ammonia tanks for storing ammonia on the island. The fertilizer will be piped from the barge through six-inch lines with the aid of a special pump at a rate of 1,000 gallons per minute. In addition, the company will have 100 railroad tank cars, each capable of storing and transporting 25 tons of the ammonia.

The new terminal storage, plus that which Mid-South Chemical Co. already has at 85 distributing points in six states, gives the firm more than 12,000 tons (5,000,000 gallons) of storage capacity. Under the expansion program, Mid-South will have access to ammonia supply from four synthetic nitrogen plants. This assures the company of prompt deliveries at lowest transportation rates. Delivery can be made by tank car or truck from either the manufacturing plants or the new river terminal.

Future plans of Mid-South include the building of warehouse and office space at the island terminal. The Soil Testing Laboratory will be moved from Woodstock, Tenn., to the new location. As a service to farmer-customers, the laboratory offers free soil test reports and fertilizer recommendations.

Mid-South will carry a full line of other fertilizer elements essential in any balanced plant food program at the warehouse. These elements will include potash, phosphate and other mixed fertilizer goods. Specialized tank storage will be provided for handling in addition to anhydrous ammonia liquefied petroleum gas and other petro-chemicals.

The Mid-South expansion program will call for the establishment of additional distributorships. Plans are also being made for distributors to offer special ammonia applicating equipment on a reasonable rental basis to small farmers near distributor plants.

Ellis Woolfolk is President of Mid-South Chemical Co.; J. D. Wooten is Vice President; Maj. Gen. Ralph H. Wooten, U. S. Air Force, Ret., Vice President; John C. Hogan, Secretary-Treasurer and Dave H. Bradford, Sales Manager. Each of the officials is a Southerner who has been in close contact with Mid-South agriculture for more than a quarter of a century.

Before the company was formed in 1949, the officials pioneered in the distribution of anhydrous ammonia, establishing their first distribution plant in 1947 at Tunica, Miss. About this same time, Dr. Baker W. Andrews and his staff at Mississippi State College were perfecting equipment for applying the liquid-gaseous form of synthetic nitrogen directly to the soil.

Since 1947, the firm has distributed between 65,000 and 70,000 tons of anhydrous ammonia to farmers in Tennessee, Mississippi, Arkansas, Missouri, Kentucky and Alabama. Mid-South is now the oldest and largest area distributing company of ammonia east of the Rockies.

# AMMONIA GROUP PRESIDENT PREDICTS WIDESPREAD GROWTH

Mark C. Craft of Springfield, Ill., president of the Agricultural Ammonia Institute, predicts that anhydrous ammonia as a commercial fertilizer will be used in many new areas during the 1954-55 fertilizer year. According to USDA estimates, anhydrous ammonia enjoyed a 44% increase in use during the year ending June 30, 1954.

The new AAI president, who succeeded E. W. Thomas of Booneville, Mo., Jan. 1, is a charter member and one of its first directors. He became Illinois' first agricultural ammonia distributor in 1950. He is president and treasurer of Midwest Fertilizer Co. at Springfield, and a partner with George J. Schmidt and Norman Mountz in the Great Northern Equipment Co. in addition to other business interests.

**Mark C. Craft**

Now that more synthetic nitrogen plants are on stream and the supply of ammonia appears to be sufficient to meet all demands, Mr. Craft said, agricultural ammonia distributors throughout the nation feel confident they can supply all agricultural needs during the coming year. USDA sources predict a further increase of 19% in agricultural ammonia consumption during the current fertilizer year, handling 395,000tons of the nation's agricultural nitrogen. However, many Institute leaders feel that figures on nitrogen consumption available to the USDA do not include all anhydrous ammonia applied by direct application.

Instead of 395,000 tons, Institute authorities believe the agricultural ammonia industry will handle approximately 475,000 tons of nitrogen this year, or roughly 22% of the total anticipated use of agricultural nitrogen in all types of fertilizers.

The AAI president said ammonia distributors throughout the nation are being encouraged to install more large pressurized tanks for storing the high analysis liquid nitrogen during off-season months. This storage will help avoid shortages during periods of high seasonal demand. Also that acreage limitations on major crops imposed by the Federal Government is serving as a strong inducement to farmers to practice better farm management. For, as farmers seek to improve their methods to the point where their net return on fewer acres is as high, if not higher, than when they farmed more acres, it is inevitable that they will use maximum quantities of plant foods.

Dr. Firman E. Bear, retired chairman of the Soils Department, Rutgers University, advised nearly 1,100 ammonia leaders at the AAI's recent convention in New Orleans that nitrogen consumption should be at least double present production capacity. Dr. Bear based this opinion on use of 25 pounds of N an acre. He said, however, better farmers are tending to use from 25 to 100 pounds of more on all crops except legumes. And some are using it on legumes. At 25 pounds per acre, Dr. Bear said the consumption of N would be 4,375,000 tons a year.

## "Weatherproof" Packages For Du Pont Chemicals

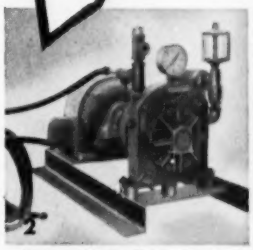
Rusty lids and washed-out tattered labels won't plague the gardener who buys his chemicals in new "weatherproof" packages adopted by the Du Pont Company for its entire line of garden chemicals. Bright yellow enamel on metal tops and bottoms of dust guns and canisters will keep them from rusting and add a colorful touch to the tool shed shelf. Varnished labels can be handled with wet hands.



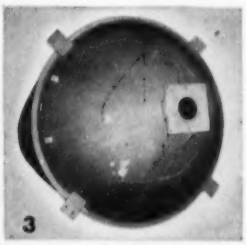

**HAVE YOU OVERLOOKED ANY OF THESE IDEAS?**

There are places in your fertilizer plants where low-cost Johnson accessories can profitably increase the efficiency of your bulk-material storage, batching and blending operations . . .

1 **Pivoted Distributor** feeds materials to multiple-section bins. Turns, locks by ground-level control.

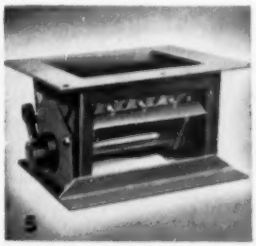


2 **Rotary Vane Compressor** supplies 7 cu. ft. air pressure per min. to aerate silos, bins. 15-lb. limit-relief valve.



3 **Aeration Fittings** properly spaced in storage bins and silos keep bulk materials fluid, free-flowing.

4 **Bin Gauges and Signals** accurately register "hi-lo levels". Automatic. Water and dust-proof.



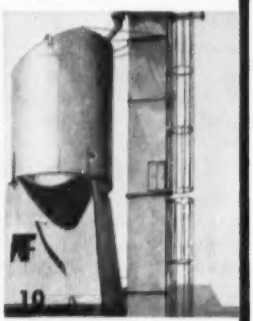
5 **Rotary Plug Valve** controls flow of finest materials. Plug works freely in self-aligning bearings.

6 **Fill Valves** single-clam, radial-type, have choker weights on closing edge for jam-proof closing.

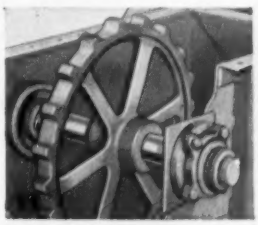
7 **Receiving Hoppers** all sizes, types for box-car, hopper-bottom car, truck, or bag delivery. Weather-tight.

8 **Elevator Buckets** all-welded, light, smooth. • Two types, 7 sizes. *Steel chain has carburized knuckles.*

9 **Batcher Test Weights** are available in sets of nine, 50-lb. calibrated units, and two 25-lb. steel hangers.



10 **Elevator Safety Cage** • 28-in.-diameter ladder safety cage, welded to casing, costs only a few dollars per foot.



**Chain Sprockets** 19-tooth chilled-rim cast iron with heavy split hub; 12-tooth cast-chrome manganese.

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J 347 "CF"

# Personals . . .

James S. Coale announced his retirement as board chairman of the I. P. Thomas & Son Company at a recent dinner honoring him on the completion of a 56-year association with the company. Mr. Coale joined the Camden-Paulsboro fertilizer company as vice president in 1898, succeeded the late Henry H. Lippincott as president in 1939, and was elected chairman of the board in 1949.

**Douglas Earley,** entomologist with the **Port Fertilizer and Chemical Co.,** Los Fresnos, Texas, has been elected chairman of the Southwestern branch of the Entomological Society of America.

* * *

**G. H. Blackmon,** head of the horticulture department of the Univ. of Florida Agricultural Experiment Station, Gainesville, retired Jan. 1 after 31 years of outstanding service in general horticulture in Florida. He is now in Iran on assignment for the Foreign Operations Administration.

**Dr. R. A. Dennison,** who has been acting head of the department for the past year while Mr. Blackmon has been on leave, continues in that position.

* * *

**Sanford R. Bell** has been promoted to the position of plant engineer at **International Minerals & Chemical Corporation's** Bonnie chemical plant, **Howard F. Roderick,** vice president in charge of the Phosphate Chemicals Division, has announced.

Mr. Bell, who joined International's Phosphate Chemicals Division last April as project engineer, replaced **Robert V. Safford,** who was recently moved up to assistant manager in charge of engineering at the Bonnie plant. The Bonnie chemical plant is located near Bartow, Florida.

**E. K. Hampson**

On January 1, **Dr. G. N. Hoffer** retired as Midwest Manager for the **American Potash Institute,** a position which he had held since the formation of the Institute in 1935.

Dr. Hoffer is internationally known for his research work in plant nutrition, plant physiology, corn breeding, and diagnostic techniques for identifying plant-food deficiencies, and he has been the recipient of many outstanding recognitions. He pioneered in the field for determining the nutrient needs of crops. His observations and studies on corn root diseases and development led him to be one of the first to recognize the deterioration in the structure of Midwest soils due to depletion of organic matter and use of heavy machinery. He will remain active as a consultant in his fields of interest and his residence will continue to be in West Lafayette, Indiana.

**Dr. Werner L. Nelson,** who resigned his connections with **North Carolina State College** last October to work with Dr. Hoffer, has been named Midwest Manager for the Institute.

Also announced was the retirement of **E. K. Hampson** from his position as Canadian manager for the Institute, a post which he had held since the Institute's formation in 1935.

**G. N. Hoffer**

Mr. Hampson's long career in agriculture started with his graduation from University of Toronto in 1915, following which he was an agricultural representative with the Ontario Department of Agriculture for four years and then Professor of Field Husbandry and Soils, Kemptville Agricultural School, for nine years. From 1928-1935 he was Ontario Representative for N. V. Potash Export, My. Always very interested in official affairs, Mr. Hampson has served on many Provincial committees dealing with Canadian agriculture. He is a past president of the Agricultural **Institute of Canada,** a member of the **Chemical Institute of Canada, The American Society of Agronomy, Soil Science Society of America,** and the **American Association for the Advancement of Science.** Mr. Hampson will continue to make his home in Hamilton, Ontario.

His successor in the managership of the Institute's Canadian Office is **Dr. Roy P. Pennington,** formerly connected with the Agronomy Department of **Pennsylvania State University.**

* * *

**St. Regis Paper Company** announces the commencement of production at its new multiwall paper bag manufacturing plant at Franklin, Virginia. The new plant will produce multiwall bags to serve industries

of the Central Southern Atlantic region. Located on a 21-acre site, the plant replaces the one formerly leased from the **Camp Manufacturing Company, Inc.,** in Franklin.

* * *

**Balfour, Guthrie & Co., Limited,** San Francisco, announce the appointment of **Harold Ferguson** (formerly vice president, NACO Fertilizer Company) to the position of senior assistant to **Dr. R. E. Neidig,** vice president Fertilizer and Chemical Department.

* * *

**Ralph S. Waltz** has been promoted to vice president and manager of the agricultural department of **Wilson & Geo. Meyer & Co.,** San Francisco. He was formerly manager of the agricultural department.

* * *

**J. W. Miller,** manager of the Southwest marketing territory, has been elected executive vice president and director of **Brea Chemicals, Inc.,** a subsidiary Union Oil Co. of California (Los Angeles).

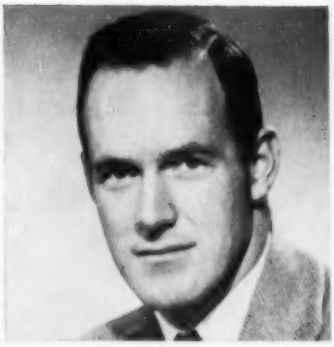
**Ronald L. Clark** has been appointed supervisor of Market Research and Development for Brea, it was announced by **Jack Tielrooy,** manager of development. Clark was formerly assistant director of market research for the **Vick Chemical Company** and subsidiaries, New York.

* * *

According to announcement by **F. Henry Savage,** vice-president and general sales manager, **William S. Snyder** has been appointed Assistant General Sales Manager of **International Paper Company,** moving up from his post as general manager of the Container Division. Mr. Snyder will concentrate on sales and other aspects of the company's converted products including multiwall shipping sacks.

* * *

**Charles W. Bowman** is a new member of the Research and Development Division of the **Davison Chemical Company Division of W. R. Grace & Co.,** assigned to the Research Engineering Department at the company's Curtis Bay (Baltimore) plant.



**Henry J. Coleman**

**Hubert H. Tucker**

Appointment, as of January 1, of Henry J. Coleman as sales manager and Hubert H. Tucker as director of Agricultural Service in the newly organized Petro-chemical Department of The Standard Oil Company (Ohio) has been announced by Edward F. Morrill, General Manager of Sohio's new department at Lima, Ohio, where Sohio's $17,000,000 petrochemical plant is being built.

Mr. Coleman joined Sohio in Cleveland in 1946, where he served successively as staff assistant in Marketing Research, advertising manager, and chief of Site Development in the Marketing Department.

Mr. Tucker has had wide experience in agricultural research, coming to Sohio from the position of president of the Coke Oven Ammonia Research Bureau at Columbus, Ohio. He holds membership in American Society of Agronomy, American Dairy Science Association, American Association of Agricultural Engineers, American Society of Animal Production, American Society of Farm Managers and Rural Appraisers, American Chemical Society, American Association for the Advancement of Science.

**J. T. Trotter** has been named sales manager of the **Bemis Bro. Bag Company** multiwall paper bag plant at East Pepperell, Mass. He replaces R. B. LeRoy, who has taken over new responsibilities with the company.

**C. C. Smith** has been appointed plant merchandiser for the Buffalo plant, Bemis Bro. Bag Company, and **D. G. Chase** has been named sales manager for the Buffalo Sales Division.

* * *

**Derward Smith,** former controller of **Higgins, Inc.,** has been appointed to the newly created post of special assistant to the president of **Delta Tank Manufacturing Co.** of Baton Rouge, La., a major subsidiary of **General Gas Corp.**

**Roy Gaddis, Jr.** has been named assistant general manager of **Highway Equipment Company, Inc.,** Cedar Rapids, Iowa. **Roy C. Gaddis, Sr.,** president, announced that Gaddis, Jr., will act in an advisory capacity and also assist in Sales.

**H. A. Wendler,** general manager of **Highway Equipment Company, Inc.,** has announced appointment of **Emerson C. Long** as manager Bulk Feed Body Division.

* * *

**Hudson Pulp & Paper Corp.,** has appointed a new president, **William Mazer,** according to **Jacob Mazer,** who moved up from president to chairman of the board, a position open since the death of his father, **Abraham Mazer,** two years ago. As president, William Mazer will be

Two new vice-presidents have been named by Fulton Bag & Cotton Mills, Fred G. Barnet, Manager of Fulton's Dallas, Texas plant, and E. Monroe Hornsby, Manager of Fulton's New York office.

**E. Monroe Hornsby**

**Fred G. Barnet**

E. Gordon Crockett formerly Vice-President of Chas. Page & Co., Inc., New York, who was with the Page organization in London and New York for 26 years, has joined Hollingshurst & Co., Inc. 8-10 Bridge Street, New York 4, N. Y. He succeeds Arthur Berger who has been President of Hollingshurst since the death of Bernard O. Graves in 1943. Arthur Berger continues as Chairman of the Board.

the company's chief operating executive.

* * *

The appointment of **W. T. Brigham** to the post in charge of all plant pest regulatory and inspection work in Connecticut effective April 1 has been announced by **Dr. James G. Horsfall,** director of **The Connecticut Agricultural Experiment Station.** Mr. Brigham will succeed **Max P. Zappe,** who is requesting retirement.

* * *

**W. D. McLean,** Boston Burlap Department of **Bemis Bro. Bag Company,** will leave in mid-February for India and Pakistan to appraise the current jute and burlap supply situation. He plans to be in Calcutta for the annual meeting of the Indian Jute Mills Association and will study the raw jute situation at first hand, with particular attention to the recent flood damage as it may affect jute supplies.

* * *

**H. Clay Hansen** has been appointed agricultural specialist in the Arkansas Fertilizer District for **Olin Mathieson Chemical Corporation, R. M. Morehead,** district sales manager, has announced. His headquarters will be at the Olin Mathieson plant in North Little Rock.

* * *

**William Mazer,** President of the **Hudson Pulp & Paper Corp.,** has announced the appointment of **T. T. "Tex" Collins, Jr.,** as Technical Director with headquarters at the Palatka, Florida mill.

* * *

**Robert B. Coons,** vice president of **American Potash & Chemical Corp.,** was elected secretary of the **Merchants and Manufacturers Association** in Los Angeles last month.

Sheldon Y. Carnes, vice president and general sales manager, Arkell & Smiths, has announced the appointment of W. H. Barrows as New England District Manager, with headquarters in the Statler Office Bldg., Boston, Mass.

**Thomas C. Boushall,** president of the **Bank of Virginia,** Richmond, was elected a director of **Virginia-Carolina Chemical Corp.** at a January 21 meeting of the board of directors. The new director is past president of the **Richmond Chamber of Commerce** and past director of the **Chamber of Commerce of the United States.**

Dr. Leland G. Butler has been appointed Director of Technical Service and Development, Eastern U.S., for Standard Agricultural Chemicals, Inc., Hoboken, N. J. A Rutgers University Ph.D. in agronomy and a weed control specialist, Dr. Butler has spent a year in Venezuela experimenting with chemical weed control on food crops as a Fellow of the Research Institute of the International Basic Economy Corporation. He will headquarter in Hoboken.

**Gerald F. Pauley** of **Monsanto Chemical Co.'s Organic Chemicals Division** has been elected president of the **Associated Drug & Chemical Industries of Missouri** for 1955.

* * *

**H. C. Little** was named assistant general manager of **American Cyanamid Company's Agricultural Chemicals Division,** it was announced by **K. C. Towe,** president. He replaces **Horace V. Cory,** who retired after 32 years service with the company, but will remain available to the Company as a consultant.

**Murray Owen** was appointed director of Empolyee Relations.

* * *

**R. H. Wyche,** rice fertilizer expert with **Beaumont (Texas) Agricultural Experiment Station** for 31 years, has accepted a two-year assignment with **Foreign Operations Administration** in Haiti to conduct research on rice, tropical fruit and vegetable production aimed at increasing that nation's food supply.

## American Potash Chemical Gets Larger New York Office

The New York offices of American Potash & Chemical Corporation have been moved to new quarters at 99 Park Avenue; previously the company maintained offices for more than 11 years in the Chanin Building, 122 42nd St. Reason for the move was given as increased operations and staff additions as a result of American Potash & Chemical Corp.'s current expansion program.

## Corrigan Co. Opens New York Office

The J. C. Corrigan Co., Inc., of Boston, Mass., engineers, manufacturers and erectors of conveying systems announce the opening of a sales office in New York City at 420 Lexington Avenue; Telephone—Le-2-9144.

Mr. Gilbert Lavoie who has been associated with the Boston Office has been appointed as Sales Engineer.

## Hough Announces New "HA" Payloader

More than three years of development and field-testing have gone into an entirely new "HA" model "Payloader" tractor-shovel according to an announcement made by The Frank G. Hough Co.

Smallest unit in the "Payloader" line, this new model has twice as much lifting, digging and carrying capacity as its predecessor. The bucket has been increased 16-⅔ percent, giving this new "HA" a payload capacity of 18 cubic feet and a struck-load capacity of 14 cubic feet.

Productive capacity has been increased from 50 to 100 percent and the maximum dumping height has been increased 18 percent. In spite of all these increases, this new "Payloader" is a more maneuverable machine with a shorter turning radius than the former model. It can be operated into and out of box cars with ease.

An entirely different bucket arm design permits exceptional breakout action of the bucket and 40 degrees of tipback. This new design makes it possible to carry heaped loads at a lower level, thus providing greater stability and better operator vision.

New standards of operator safety and ease of operation result from a combination of the new bucket arm design, which keeps the arms below the operator's level, and a hydraulic accumulator which minimizes load shocks and stabilizes the hydraulic controls.

Torque converter drive and full-reversing transmission are combined to assure fast operating cycles and ease of operation.

A sealed and pressurized hydraulic system has been incorporated and double-acting rams operate the boom-arms and the bucket.

The case of accessibility of all service points has been improved to assist better maintenance. Other new features include: improved steering; new solenoid starting controls; new ignition lock; dust-proof distributor; improved bucket construction; hose connectors; sealed grease fittings; new pin lock design; improved ground clearance; increased drawbar pull; new parking brake and many others.

Complete information and literature on this new "Payloader" can be secured from The Frank G. Hough Co., 702 Seventh Street, Libertyville, Ill.


**Alex. M. McIver & Son**

BROKERS

Specializing

SULPHURIC ACID

Ground Cotton Bur Ash, 38/42% $K_2O$ Potash.

Nitrogenous Materials

Castor Pomace

Urea, 45½% and 46% Nitrogen

Calcium Ammonium Nitrate, 20.5% Nitrogen

Representatives

Morgan Brothers Bag Company, Inc.

Bags—Paper and Textile

Ammoniated Base and Superphosphate

Dolomitic Lime

(42-44% Magnesium Carbonate)
(54/56% Calcium Carbonate)

POTASH

PEOPLES OFFICE BUILDING

Charleston South Carolina

Phones: 3-4828 and 3-4829

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FERTILIZER CHEMISTS

Three Convenient Laboratories

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P. O. Box 629 Wilmington, N. C.

**VERMICULITE FINES**

(Fertilizer Conditioner)
Truck and Carload Quantities

American Vermiculite Company, Inc.

Phones 2201 & 2301
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● Process Consultants

● Designers

● Builders

**The D. M. WEATHERLY CO.**

830 Ponce de Leon Ave., N.E.
Atlanta, Georgia

# SAFETY.....

## CONSUMERS CO-OP HAS EFFECTIVE SAFETY PLAN

It is a well-known fact that the fertilizer industry is one in which much safety progress has been made over the past few years. The fact is equally well known that much more needs to be done if fertilizer plants are to achieve the goal of reduced insurance costs both from the standpoint of workmen's compensation and fire insurance rates.

Due to the rapid growth of the fertilizer industry, it has been necessary for accident and fire prevention to trail to some extent the pace of production.

Management is of course aware of the fact that when accidents increase, operating costs are raised for the employer, and it is obvious that when the employe is injured in an accident that his loss of wages creates a very practical problem for him in economics as related to his family.

**Above:** J. Lauren Shopen, safety director, Consumers Cooperative Association, Kansas City, and Captain D. W. Handrick, Personnel and Training Division Colorado State Patrol, Denver. **Below:** Homer A. Young, assistant general manager, and Bruce H. McCully, first assistant general manager, Consumers Cooperative Association, Kansas City.

When accidents occur, it is not uncommon for a man in the fertilizer industry to lose several weeks or months due to the accidents.

By the same token oftentimes equipment involved in the accident demands extensive repairs or is nonuseable as a result of the accident.

The question then arises as to what means are available for controlling this type of monetary and labor losses.

The Consumers Cooperative Association of Kansas City, Missouri believes there are definite and positive steps that can be taken in accident control in the fertilizer industry.

Naturally, every fertilizer plant must be concerned with such things as having good mechanical equipment. well-trained personnel carefully selected, periodic fire drills, adequate safety equipment with employes properly trained to use such equipment, regular safety meetings, pre-employment physicals and similar items of accident control.

This article does not propose to outline these all-important phases of accident reduction but rather to single out other items of accident prevention which are of equally great significance and which may be of particular interest to companies with operations in several states.

The Association has found that occasional safety letters sent directly to the home of workers, containing data pertaining to the progress of the plant safety-wise is a helpful factor. In such cases the wives and often the rest of the family read the correspondence. These letters are based on safety precautions as well as a recap of the safety progress of the plant.

Visual material both of the film strip type and 16 mm movies are used at times to develop interest.

Often 16 x 23 specially prepared cards as visual data are used to tell a story in regard to accident prevention and to give comparative statistics.

The key note of the interest portion of the program is perhaps summarized by the following in connection with the use of a tape recorder used in the program.

The Safety Department prepares certain material which is given to one plant as a lead off for the other plants. This may contain data pertaining to methods of safe operation, the need for safety equipment, proper care of safety equipment, fire drills, etc.

By this time the employes are interested in helping to make the tape recording so that their voices can carry a particular safety message to another fertilizer plant regarding safety, fire prevention or employe health measures which may be of interest to another plant.

Dissemination of this type of information from plant to plant is of great assistance as it enables each plant to see that the others are following a safety pattern similar to the one in which the recording is being played.

The key point of the tape recording program is, however, to provide top management participation. This applies to fertilizer operations, to transportation operations as is shown in the attached picture or to any operation where top management participation is desirable, and we know of no exceptions to the desirability of such participation.

In the attached picture top management representatives of the Association are making a recording directly to the transportation outpoints at which time certain key points regarding accident prevention were stressed. The script for the 20-minute tape recording was prepared by the Safety Department and through the use of such a script and through the personal interest of top management items such as the importance to the organization of safety was stressed and tied in with the relationship of good citizenship in accident prevention.

Further than this, the effect of an accident on the employe, his family and his company is also brought to the fore.

The Highway Patrol, after having heard the recording referred to above, had the following comments to make as is shown by the attachment.

In addition, the picture of the Safety Director of the organization, explaining the tape recording to the highway representative is also attached.

The answer to a good safety record in the fertilizer industry is people. Good supervisors, interested supervisors, and qualified and interested employes working under the direction of capable supervisors.

Recognition of such employes by top management personnel through the medium of a tape recorder may help to provide the solution to the accident control problem in the fertilizer industry.

## Hercules Scholarships Awarded To Six

The six National winners of $300 college scholarships in the National 4-H Entomology Awards Program were announced at the opening of the 33rd National 4-H Club Congress. This is the third year of competition in the Entomology Awards Program, sponsored by Hercules Powder Company.

# SOUTHERN SAFETY CONFERENCE PROGRAM COMPLETE

Curtis A. Cox, chairman of the Fertilizer Section of the Southern Safety Conference, has announced the program topics and guest speakers for the group's meeting to be held at the Jung Hotel in New Orleans, February 28—March 1.

He pointed out that the conference speakers for this meeting have had wide experience in the field of industrial safety and maintenance, and stated that the entire program should be particularly outstanding.

Cox, assistant manager of the manufacturing department for Virginia-Carolina Chemical Corporation in Richmond, Va., is also vice chairman of the Fertilizer Section of the National Safety Council.

**PROGRAM**
**FERTILIZER SECTION**
**SOUTHERN SAFETY CONFERENCE**
New Orleans, La.
February 28—March 1, 1955

**February 28**

2:00 P. M. **Safety—A Sound Investment.** A. B. Pettit, Supervisor Industrial Health and Safety, Davison Chemical Company, Division of W. R. Grace Company, Baltimore, Maryland.

2:30 P.M. **Report on Activities of Safety Organizations in the Fertilizer Industry—National, Regional and State.** Vernon S. Gornto, Manager Insurance Department, Smith-Douglass Company, Inc., Norfolk, Virginia.

3:00 P.M. **Interesting the Foreman in A Safety Program.** John S. Mark, Director, Iowa Farm Supply Company, Des Moines, Iowa.

3:30 P.M. **Workable Small Plant Safety Program.** Harold R. Krueger, Production Manager, Snyder Chemical Company, Topeka, Kansas.

4:00 P.M. **Question and Answer Period Leader:** F. Wayne High, Manager of Operations, Baugh Chemical Company, Baltimore, Maryland.

**March 1**

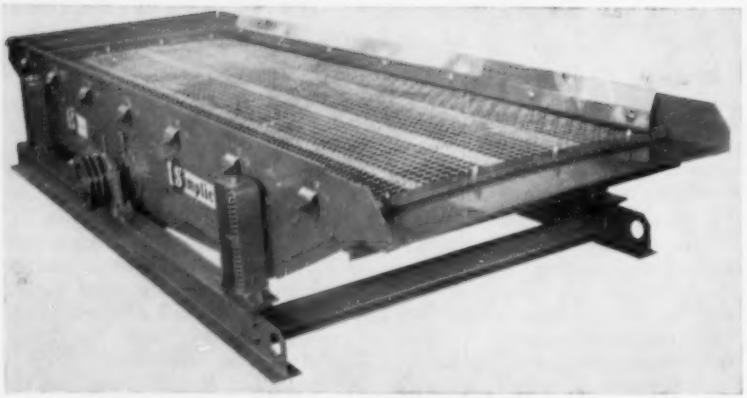
2:00 P.M. **Report of Nominating Committee and Election of Officers.**

2:15 P.M. **I Believe.** T. J. Clarke, Chairman of the Fertilizer Section, National Safety Council.

2:45 P.M. **Handling Ammonia Solutions Safely.** Charles L. McDaniel, Technical Service Supervisor, Lion Oil Company, El Dorado, Arkansas.

3:15 P.M. **Safe Blasting Practices.** A. L. Foster, Superintendent, International Minerals and Chemical Corporation, Spartanburg, South Carolina.

3:45 P.M. **Discussion and Observations from the Floor.**



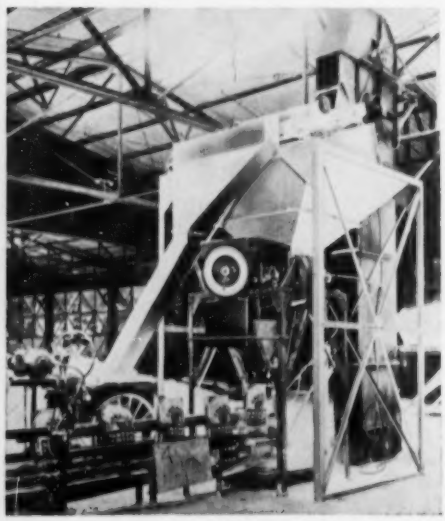
This light, compact 3' x 8' gyrating screen provides a full 24 square feet of screening surface. Its completely balanced assembly concentrates the vibration to the deck with little or no vibration transmitted to the main frame, plant floor or supporting structure. The unit weights 1000 lbs, is produced by Simplicity Engineering Co., Durand, Mich. The unit is tapered at the discharge end so it will easily fit existing conveyors. To further adapt the machine to the user's operation, it is manufactured either with stainless steel screen cloth or with a mild steel deck and spring steel screen cloth. All welded parts are normalized to relieve stress. Note the screen cloth is provided with tension on all four sides. By doing this the screen can be equipped with lighter wire cloth giving more open area, thus, more capacity.

Manufacturers of free flowing materials who require high speed, extremely accurate weighing and packaging of their products will be interested in the new I & C Bagger (Model UB-101) according to Union Bag & Paper Corporation, exclusive sales agents for this automatic weighing and filling machine and other Inglett & Corley equipment.

The new machine works in conjunction with a moving conveyor and sewing head; its weighing and filling cycle is completely automatic. It begins when the operator pushes the starter button, which automatically delivers the pre-weighed material through the machine's bag chute in an endless series. The filled weight drops each of the open mouth multiwall bags on to a moving conveyor belt which leads them through the sewing head.

In addition to incorporating the basic principals of the original machine (Model UB-100) the new machine offers these added advantages: Dial Type Scale: Double-faced so that both the closing and filling operators can see it at all times. New Switch System: This model weighs units from 25 to 200 lbs. A system of switches within reach of the bagging operator enables him to change weight units immediately by merely operating the switch covering the desired unit. If operator wants to check-weigh the product on the machine, he depresses another switch, and can fill the hopper, without it discharging, and check its exact weight on the dial scale.

In regard to accuracy of weights, Model UB-101 tested at plus or minus 1-2 ounces over a six month period. The average speed was eighteen 100 lb. multiwall bags per minute.



## 25% Higher Capacity With Girdler Catalyst

The Girdler Company, Louisville, Ky., reports that in recent commercial tests its G-29 catalyst has demonstrated significant economic advantages over similar nickel base catalysts.

A company spokesman said:

"In preparing ammonia synthesis gas from natural gas by the steam-reforming process, it was found that a 25% increase in production capacity could be obtained without sacrificing the quality of the synthesis gas.

"At the production rates used with previously available catalysts, it is possible to reduce the reaction temperature by 100° F. without loss of efficiency, thus saving process fuel costs."

The G-29 catalyst, produced by Girdler, contains approximately 27% nickel that becomes active in the reforming of hydrocarbons at temperatures of 1100° F to 1850° F. It is employed in the production of ammonia synthesis gases, controlled atmospheres and carrier and fuel gas, and for the dissociation of ammonia.

The catalyst is preshrunk so that physical shrinkage at temperatures below 1850° F. will be less than 5%. The catalyst is generally supplied in the form of ½" or ¾" extrusions having apparent gross densities of 84 and 80 pounds per cubic food respectively, and may also be supplied in the form of ¾" rings.

## Marietta Concrete Acquires Plant

**The Marietta Concrete Corporation** acquired Conroe Concretes in Jamestown, New York and commenced its operation as a branch plant. The new plant is actually located in Falconer, a suburb of Jamestown, and will manufacture farm and industrial silos and other concrete products for agricultural and commercial building.

Heading the new acquisition is **Robert Christy**, formerly general superintendent of the Marietta production plant. The new Marietta plant brings the total to six in six states and increases the territory covered to most of the Eastern United States.

## Consolidated To Handle Phillips Instruments

Consolidated Engineering Corp., Pasadena, Calif., announced it will manufacture and market continuous plant analysis and control instruments developed by Phillips Petroleum Co. of Bartlesville, Okla.

Consolidated said it will make the Phillips-developed instruments available through its nation-wide sales and service centers.

Instruments slated for immediate marketing include infrared gas analyzers, differential refractometers, ultraviolet analyzers and oxygen analyzers. These electronic and optical devices, Consolidated said, are capable of such operations as fractionation, blending and chemical synthesis.

## Hyster Material Handling Report

Hyster Company has issued a new Field Report, No. 50, on the profitable handling of dairy products, poultry, hog and dairy feeds, and chemical fertilizers with the QN-20 and YT-40 model lift trucks. Prepared in the field by Hyster engineers, the illustrated report is an actual case history of modern labor-saving handling and storing methods in conjunction with these Hyster models. Copies are available from the nearest dealer, or by writing to the Hyster Company, P. O. Box 4318, Dept. P. S., Portland 8, Oregon.

# *Crop Chemicals . . .*

## PESTICIDES CARRY-OVER IN '54 DOWN TEN PERCENT FROM '53

The U. S. Department of Agriculture reported January 13 that carry-over stocks of 26 major pesticidal chemicals in the hands of manufacturers on Septembr 30, 1954, totaled 134,600,000 pounds—a drop of 10 percent from the 149,500,000 pounds in inventory on the same date a year earlier.

Of the reported 1954 stocks, a total of 50,100,000 pounds, or 37 percent, was in the form of pesticidal dilutions or "formulations," mostly ready-to-use. In 1953, 47,600,000 pounds, or 32 percent of the September 30 carry-over, represented formulations.

In making the report, Department officials said that over-all stocks of pesticidal materials could be considered "normal," but that inventories of some individual chemicals varied somewhat, both up and down, from normal.

The report, based on preliminary results of an industry survey undertaken in cooperation with National Agricultural Chemicals Association, is believed to represent between 90 and 95 percent of actual inventories in the United States as of September 30, 1954. A total of 141 manufacturers, including most of the major producers, provided information.

## ALDRIN, DIELDRIN EARN LOWER HAZARD RATING

As a direct consequence of the safe-use record established by aldrin and dieldrin, the Pesticides Regulation Section of the USDA now permits lower hazard classifications for products containing these compounds, F. W. Hatch, manager of the Agricultural Chemicals Division, Shell Chemical Corporation, announced recently. The lower hazard classifications permit milder warning and precautionary statements on product labels.

In the course of manufacturing and packaging these products over a five-year period, there have been instances of exceptionally high exposure to them, higher than is likely to occur from their normal use. No demonstrable harm has resulted. Precautions for use are now similar to those recommended for other chlorinated hydrocarbon insecticides, i. e., adequate care should be taken to avoid swallowing, breathing dust and sprays, and contaminating the skin.

Products containing 10% through 59% aldrin or dieldrin, which include most commercial formulations, are now placed in a lower hazard category, which requires the mild signal word "Warning" on the label. Another relaxation is the substitution of the term "Hazardous" in the warning statement for "Poisonous."

Aldrin and dieldrin products below 10%, which include most dust and granular formulations, may now be labeled with even milder statements, i. e., "Warning" may be replaced by the simple word, "Caution."

### Southern Weed Conference Elects Dr. Klingman

Significant gains in the battle to control weeds were reported to 275 delegates at the Eighth Annual Southern Weed Conference, meeting at St. Petersburg January 17-19.

Dr. Warren C. Shaw, president of the conference, reported one out of ten acres of U. S. crop land is now chemically treated for weed control, methods unknown a decade ago but now grown from fundamental research into a multi-million-dollar undertaking.

Last year farmers spent 48 million dollars for weed control, 26 million going for chemical weed killers and the remainder for chemical and custom spraying, including increased aerial applications.

Tailor-made chemicals with increased selectivity are the trend in herbicides, according to Dr. Shaw, three new classes of these being reported at the conference. Agricultural experiment station reports revealed that carbamates are proving effective for weed control in cotton, with striking potential shown for urea herbicides. The latter, however, need further study, said conference authorities.

Elected for the Ninth Annual Conference, to be held at the Jung Hotel, New Orleans, Jan. 16-18, 1956, were these officers—President: Dr. G. C. Klingman, N. C. State College, Raleigh; Vice President: Dr. W. B. Albert, S. C. Ag. Experiment Sta., Clemson; Secretary: Dr. E. G. Rogers, Fla. Ag. Exp. Sta., Gainesville; Executive Committee: H. E. Rea, J. R. Wheatley and W. K. Porter.

Outlining 1955 plans, Dr. Klingman announced a research sub-committee to study aquatic weeds, and addition of sub-committees on fruits, vegetables and ornamentals. He called for "concentrated effort to study germination aspects of weeds as well as weather and soil factors on chemicals to try to learn what makes them effective."

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